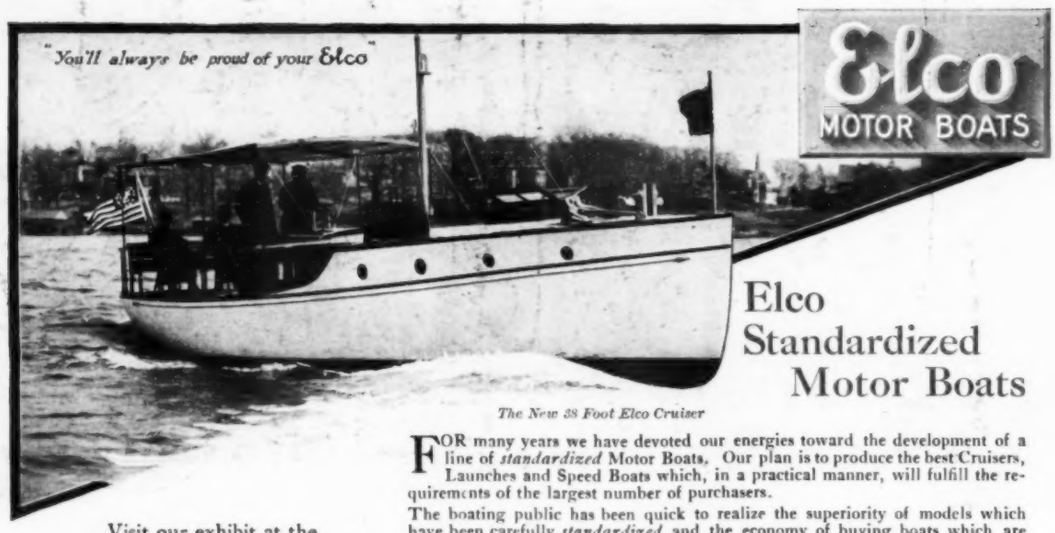
MOTOR BOATING

THE MOTOR BOAT SHOWS



The New 38 Foot Elco Cruiser

Elco Standardized Motor Boats

FOR many years we have devoted our energies toward the development of a line of *standardized* Motor Boats. Our plan is to produce the best Cruisers, Launches and Speed Boats which, in a practical manner, will fulfill the requirements of the largest number of purchasers.

The boating public has been quick to realize the superiority of models which have been carefully *standardized* and the economy of buying boats which are built in large numbers at one time.

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Write for Catalogue of "Marine Views"

Visit our exhibit at the
MOTOR BOAT SHOWS
Madison Sq. Garden, New York
January 31st to February 7th

Coliseum, Chicago, Ill.
February 28th to March 7th

The Elco Company 201 Avenue A, Bayonne, N. J.

27 minutes from Liberty and 23rd Street Ferries, Central Railroad of N. J. to West 8th Street.
Telephone 470 Bayonne

COMMODORE
Party Fishing Boat
65 H. P. Standard

HENRY WRIGHT
(Owner)
East Rockaway, L. I.

REAL PROGRESSIVENESS

is steady, gradual growth. Perfection comes only through evolution.

A revolution of claims today to cover up the experimental device of yesterday can't make a perfect engine.

Sane, Consistent Evolution of Parts has made

THE STANDARD ENGINE

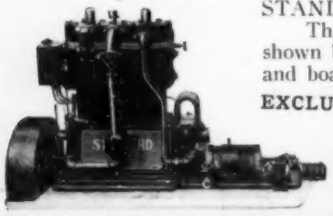
It is the gradual development, the standardization of parts which has given this finished product, this simple, smooth running, economical machine.

The high priced ad writer can't make such an engine.

Such can't be built in a day, in spite of the verbal guarantee back of the newly designed article. It can't be done by jumping from one design to another, one appliance to another.

The engine's success (your boat's success) is only had by the years of unfailing progressive purpose in the STANDARD policy of designing, building and serving you.

The STANDARD'S reward is the always increasing STANDARD following as shown by Lloyd's and all shipping records and by the acclaim of STANDARD owners and boating men. This, too, is your proof.



EXCLUSIVE FEATURES:—Governor Control, Virgin Lubrication, Operative Ignition.

Back of the STANDARD guarantee is the

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178 WHITON STREET **JERSEY CITY, N. J.**

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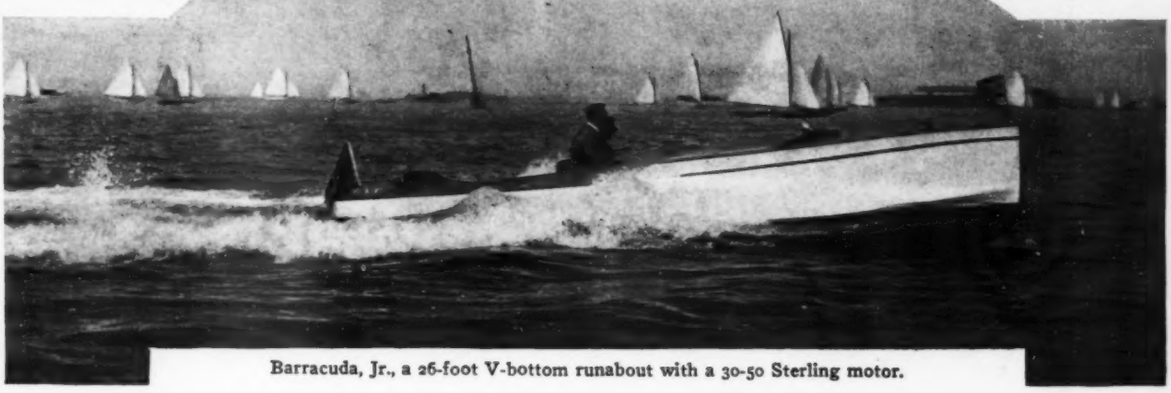

Barracuda, Jr., a 26-foot V-bottom runabout with a 30-50 Sterling motor.

New York and Chicago Show Forecast Number

February, 1914 — MOTOR BOATING — Vol. XIII, No. 2

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The afternoon sun, emerging from a bank of clouds, begins to mark its western route in the silvery waters, and a slight breeze springing up sends the laughing ripples lapping against the hull in soft, murmuring whispers.

MOTOR BOATING
THE NATIONAL MAGAZINE of MOTOR BOATING

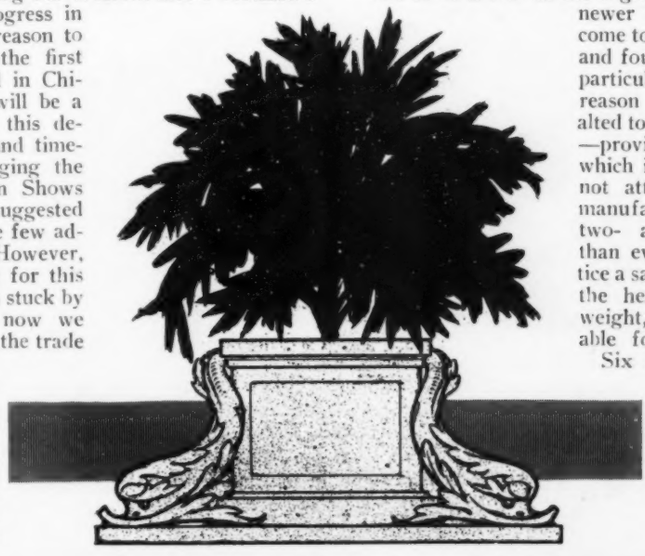
New York and Chicago Shows

The Exceptional Quality of the Annual Exhibitions This Year and the Healthful Condition of the Trade. A Change of Show Schedules Which Is of Benefit to Everyone.

SHOW time again! The moment which every motor boatman has been looking forward to since he hauled his boat out last fall and made her snug under a dry covering for the winter has arrived. January 31st marked the day in the motor boating world at least, when the ground hog came out of his hole and, not seeing his shadow, knew that the back of winter had been broken and that from that day the world would take on new life. For on that day the Annual Motor Boat Show opened in Madison Square Garden, New York City, and crowds even greater than generally flow in on the opening night were waiting the opportune moment.

What they were to see and learn was worth all the slow going and expectant two months previous, for the National Association of Engine and Boat Manufacturers had not been idle even though the wind had been cold from the nor'west and the rivers and creeks were ice-bound. From more standpoints than one they had produced a show the like of which had never before been even appproached.

We find the policy of moving the dates for the New York Show ahead some three weeks is a most popular one, and the idea of giving our Western motor boatmen a chance to view the progress in this field, gives every reason to make us believe that the first Motor Boat Show held in Chicago for many years will be a grand success. When this departure from the old and time-worn custom of arranging the New York and Boston Shows was first tentatively suggested last summer, there were few advocates in its favor. However, those who were strong for this new and up-to-date plan stuck by their convictions and now we find both the owner and the trade benefiting by it.



Looking over the list of exhibitors, we find few, yes, very few of those who are to be at Chicago later this month and the first week of next who are not on the job at the Garden. Those few who are not, are simply guided by local consideration, so one may safely assume that both shows are national in their scope and representation.

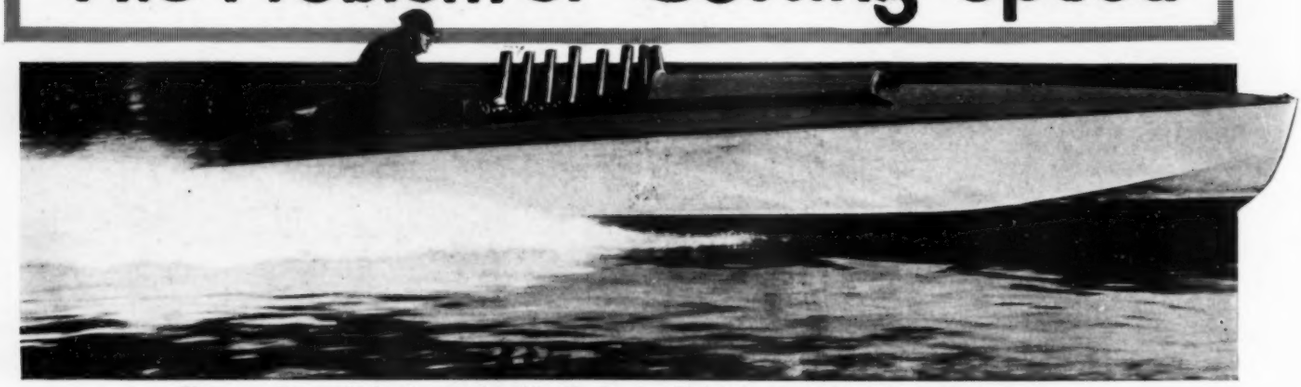
All of our old friends in the trade are with us again this year—firms which did so much to foster the sport and trade in its infancy again show the result of their foresight in what is now one of America's foremost industries. Those who exhibited for the first time in 1912 or 1913 are, almost without exception, again on the firing line.

If one should ask what the greatest tendency the present show seems to indicate is, the answer would invariably be "Standardization." We see it on every side. For example—in the boats and hulls alone, we find a greater effort on the part of the manufacturers to give the user something that is really usable. Usable, not only on stated occasions, but for all purposes for which they are designed, not by having a great number and variety of models, but by limiting these to a few and embodying in each some strong and characteristic features which are the result of much thought and study and show a thorough and inside knowledge of the subject.

The same is true of the engine exhibits—especially the newer models. Everyone has come to realize that both the two- and four-cycle models have their particular uses, and there is no reason why one should be exalted to the exclusion of the other—provided, of course, that that which is physically impossible is not attempted. We see more manufacturers turning out both two- and four-cycle products than ever before. Also we notice a sane discrimination between the heavy duty and the light weight, high speed motor, suitable for racing purposes only.

Six firms are exhibiting the Diesel type of motor, and while we are pleased to note this progress, yet the Diesel has its field, and one should not believe that it means the downfall of the gasoline motor.

The Problem of Getting Speed



Harpoon, the new hydroplane designed by Mr. Lord, which in her first trip made 50 miles an hour.

Things Which the Designer Is Up Against Which Are Generally Unknown to the Average Motor Boatman. The Perfection of the High Speed Motor Which Means Much to Racing.

By Frederick K. Lord.

IN these days of high-pressure living, when we sleep in a hurry and eat on the run, an indication of our nervous energy is afforded by the demand for increased speed in locomotion. In answer to this demand we have trains, automobiles and aeroplanes moving at almost incredible speeds, and incidentally breaking hundreds of necks at the same time. Now, it seems that, having exhausted their sensations on land, the speed demons have turned their attention to the water, and enthusiastically adjured the yacht designers to make them something that would "really go."

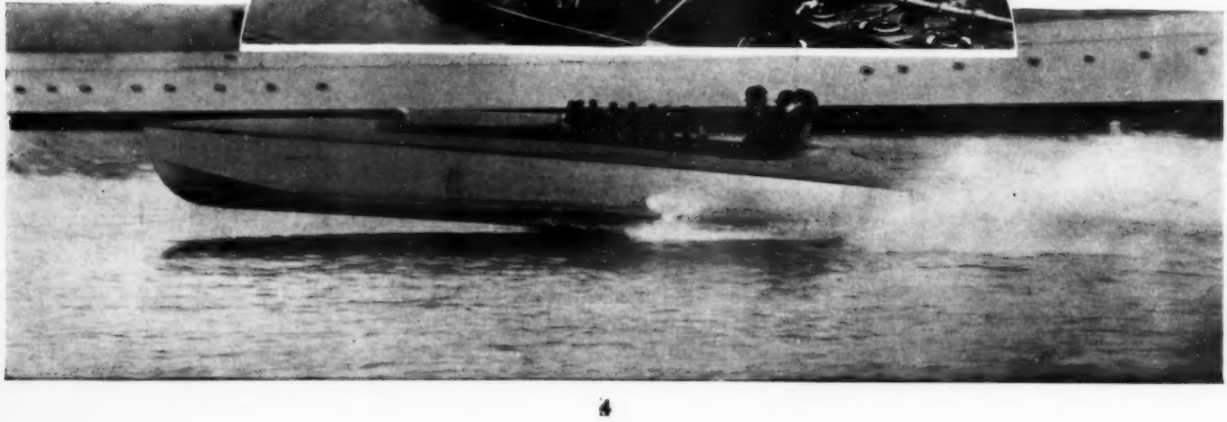
At first the wary architect immediately assumed the attitude of the turtle when in doubt, and drew his head within his shell. But after a while he stuck his head out to listen and become a lost man. Thus the unfortunate N. A., seized by the demon and securely held in his unrelenting claws, toils and burns the midnight oil, racking his brain for some wild approximation to a boat that perchance might have some of that elusive "go" quality to it.

The problem of hydroplane design is one of considerable difficulty, and there is yet very much to learn. It is a subject that should be handled only by men of scientific as well as practical knowledge, and who are thoroughly familiar with yacht designing and the water. Many people not possessing the above requirements have recently built boats on the hydroplane principle, and they have all been failures, when compared with what has been done. The only boats, barring some successful copies, which have shown any efficiency are the product of trained minds, and we must look to these men for the final solution of the problem.

Of course, the basic idea is a surface submerged at such an angle that when driven forward it shall lift the boat and drive it, to a certain degree, over the water. The surface or "plane" is the vital thing. The question then arises, What is its proper shape for efficiency? Is it flat, rounding, hollow, V-shaped, or is there any particular shape at all? Also, how about its width? The aeroplane wing has demonstrated that at various speeds there is an efficient relation between width and depth. In a hydroplane we can have a short wide plane (as in the aeroplane) running at a rather steep angle, or a long narrow plane running at a small angle. In the first case, the wetted surface is low but the angular plane resistance high, and vice versa in the second case. Thornycraft has demonstrated mathematically that maximum efficiency occurs when the resistance due to wetted surface and plane angle are equal to each other. But how are we to figure this out in practice in a boat? Again, take the water as it leaves the after end of a plane: what course does it follow at different speeds and depths in rising to hit the following plane. If this plane is to have an efficient angle we must know this. But we don't. It has been demonstrated that the first plane in a series will support more weight per square foot on a given angle than

The new type of hydroplane at speed. Note how she rides on practically an even keel with only a short portion of the forward plane in the water.

The designer with the serious look and the engineer-owner smiling.



Harpoon running in a snow storm on the Harlem River at the rate of 50 miles an hour.

succeeding planes. But how much more? How much do we actually know of the effect of air under the planes and steps?

Some design their boats to imprison and run on air. Yet Lord Kelvin proved that a bubbly mixture of air and water caused increased frictional resistance. How about it? The faster a plane, supporting a certain weight, is driven, the less the angle necessary. What are the ratios? What is the relation between hull weight, plane surface, horsepower and speed? What do we know of the aerodynamic lift of the exposed forebody or the wind resistance of the hull? How much resistance is there to the propeller shaft stripping through the water, and in what ratio does it increase, and how much lift does it exert? How can we calculate the stability of a moving plane in order to determine necessary boat width? When a plane is heeled at a side angle, what is the lateral pressure exerted? All these questions will take years to answer definitely. The facts will come slowly as in any science; and, as in many other cases, we shall have to turn to the scientific investigator. The model towing tank and the aerodynamic laboratory will probably furnish the solution of the basic laws, and then the designer, keeping these laws in mind, will have to incorporate them in the boat and determine by actual trial the best combination of these elements for every particular size of boat: just as he does in the design of the normal types of vessels. In addition, the hydroplane boat must steer true and not skid, pound, jump or dive, and must also be dry, stable and fairly seaworthy, as small boats go. Truly a subject for any amount of study.

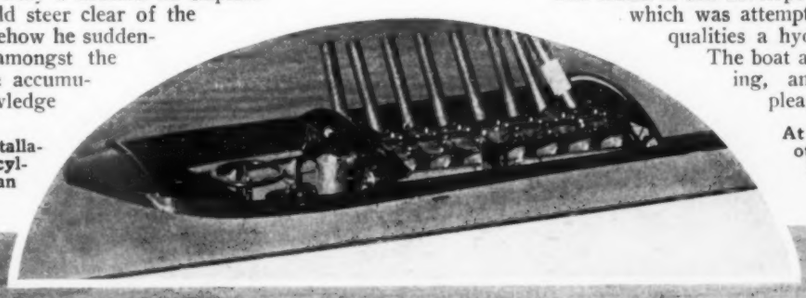
Realizing the difficulties, the writer decided that, as he had enough to keep him busy a lifetime on displacement boats, he would steer clear of the "hydros." But somehow he suddenly found himself amongst the "hydroists." So he accumulated what knowledge he could on the subject and then incorporated them as best he could in a hull of his own type.

The particular demon that got me appeared last spring in the form of Mr. Wilbur H. Young, of New York, and anybody who has suffered the experience of thrusting his fair hand into Wilbur's five-fingered stilson wrench will realize at once that I was doomed. When I meekly suggested that I was not aware that any 26-footer with 180 H.P. had done much better than 42 miles on 3500 pounds, and that my ideas might be all wrong anyway, he said, "No, she should do 48 miles," and I subsided and began to toil over the board.

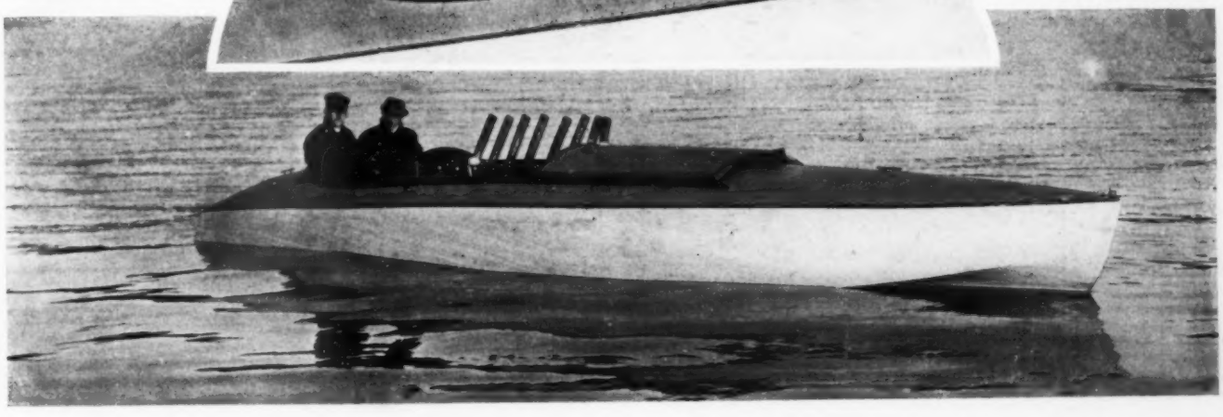
The boat was built by William Kretzer on the Harlem River, and credit is due him for putting up an excellent piece of workmanship. The motor was a 5½ x 6, eight-cylinder Van Blerck, and as it was two years old, had been sent back to the factory to be adjusted for hydroplane work and fitted with his oiling system so successfully used in his racing engines.

When we launched her, on December 20th, the temperature was 34 degrees, with a cold wind, a condition unfavorable for obtaining maximum speed and very trying on the crew. Due to the cold, no time was wasted in preliminary running, and the boat was put over the course the minute the motor attained her revolutions, which was about 1600. Three double runs were made with and against tide, and the boat did fifty miles per hour. Under better conditions and with a chance to try other propellers she should do better, but the speed attained, which was over a very accurately measured course, is certainly very good considering the power, size and weight of the outfit.

The model is one developed by the writer and in which was attempted to incorporate the qualities a hydroplane should have. The boat appeared to be promising, and Mr. Young was pleased with her.



The cockpit and installation of the 180 h. p. 8-cylinder 5¼ x 6-in. Van Blerck motor.



At rest, she is not unlike other hydros except perhaps of trifle more graceful lines and with a reverse sheer.

A·MODERN·MOTOR·HOUSEBOAT

Dreamer, a 60 x 17 Ft. Shoal - Draft, Single Screw Boat With 40 H.P.

Novel Tunnel Stern Construction and a Departure from Orthodox Houseboat Appearance.

THE photographs on this page and the next are of a shoal-draft houseboat, Dreamer, designed by Swasey, Raymond & Page, of Boston, Mass., for Mr. Charles W. Lee of New York for general use the year round. In the summertime she will be used in the vicinity of Long Island Sound, and in the winter down the East Coast of Florida and in the many delightful waterways of that State.

Dreamer is a 60-footer, now cruising in Florida, which will be used in the summer on Long Island Sound and vicinity.

The draft of the vessel has been restricted to 3 feet on account of the prevailing shoalness of the water in Florida, for it is a fact that to the boat carrying even the comparatively shoal draft of 4 feet, for instance, many of the most beautiful spots will be denied. In spite of her shallow draft, however, the lines of Mr. Lee's boat have been so modeled that she possesses good sea-going qualities as well.

She is of the regulation tunnel stern type, in which tunnel the propeller works, and provision has been made so that in case of grounding—and, considering the deviations and uncertainties of the channels in Florida, this might be put, *when* she grounds, the propeller will es-

The completely equipped galley is connected with the saloon forward by a central passage. The 40 h. p. Sterling motor gives the boat an eight-mile speed.

The saloon or living-room is an unusually cheery place, being well lighted by ports and windows and being equipped with piano and open grate.

cape injury. The freeboard has been kept higher than in a great many boats of this type, and the house being higher too, it gives the vessel a more shippy appearance. Instead of using circular ports, the windows are similar to those of a house, and these in conjunction with the skylights and ventilating cowls will give good light and ventilation in all compartments.

The upper deck with steering location forward, giving an idea of this deck's roominess.

As the boat has been intended to live upon, the rooms below were all made large and roomy. The cabin is in the forward part of the boat, which is generally the most pleasant part, and is to be used as a living-room. It is equipped with sideboard, tables, chairs and lounges, and is a very pleasant place to sit in. In addition to this regular equipment, a piano has been installed, and an open grate to make things cheery when there is a chill in the air. A center line passage leads from the cabin aft to the engine-room and galley. Opening off this passageway are two staterooms on one side and stateroom with adjoining bathroom opposite. These staterooms, which will accommodate six persons, are equipped with extension transoms, bureaus and locker space, and the bathroom is completely equipped with toilet, wash basin, and tub with shower. The power plant consists of a 40-h.p. Sterling, giving a speed of over 8 miles.

An Alcohol Engine of 100 H. P.

An Interesting Marine Engine of Six Cylinders Recently Built in Germany. A Motor Which Starts on Gasoline but Soon Picks Up Its Cycle on Alcohol.

THE cylinders of this German engine appear as twin-casts, and besides the two running jackets, the cylinder-cast comprises all valve-chambers, the canals for introducing the working air and conducting away the burnt charge, and the cooling-water spaces. On the exhaust side, the water-jacket is closed with a capacious cover, easily removable for the purpose of cleaning the spaces. The valve spindles work in bronze bushings, drilled for admitting from without, oil, or, in the case of their seizing, paraffin.

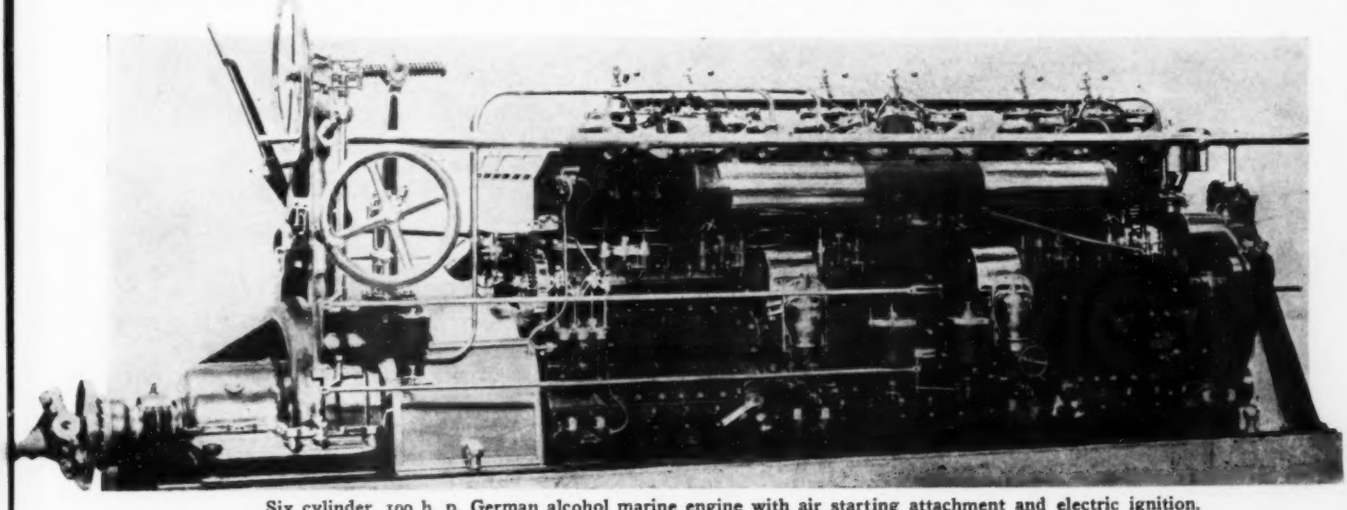
Turning to the crankhouse, this is wholly closed with the triple object of protecting the propulsive machinery from external influences, of preventing the lubricant from splashing about, and of providing a reservoir or sump for fresh lubricating oil. The crankshaft possesses four sets of bearings, which are water-cooled, and mounted on through-trusses of rectangular cross-section, prolonged outwardly on both sides beyond the crank-housing, and thus constituting the supports for the entire engine. These arms rest on planed angle-bars that also carry the reversing mechanism. There are large inspection-plates on each side of the crankcase's upper section.

The four hollow arms of the crankcase are partitioned off into two separate chambers, of which the upper serves as cooling-water lead for the main bearing of the crankshaft, while the lower plays the part of oil-reservoir. Through collecting leads the corresponding chambers stand in connection with each other. In the arms there is also an oil-filler with sieve, likewise an oil-gauge, as well as an oil cleanser for lubricant that has already been forced through the engine.

At the side of the crank-housing's top, above the large lateral openings, is a separate and distinct housing for the camshaft, which primarily operates the laterally-mounted valves. The shaft obtains its motion through the agency of spur-wheels with a 1:2-gear, brought into engagement by an intermediate wheel. It belongs to the three-section category, and emerges from its housing where the coupling-pieces are constructed as driving cranks for the water-pumps. From the after end of the camshaft a tachometer for registering the r.p.m. is driven through a chain. From here, too, a high-tension distributor is driven.

The pumps themselves are attached to the crankcase, and respectively circulate the cooling-water and drain the bilge.

As to the propulsive machinery proper, the pistons are casts having each four self-expanding rings of the same composition. The gudgeon-pins have been conically inset, and equipped with a protecting plate of bronze, which, if the cone worked loose, would save the cylinder's working-surface from damage. The connecting-rods are of forged steel, and severally embrace the gudgeon-pins with an undivided bronze bushing.



Six cylinder, 100 h. p. German alcohol marine engine with air starting attachment and electric ignition.

Present Bore & Stroke Tendencies.

How Standard Practice Varies in the Heavy Duty, Medium Duty and Light-Weight Models. The Average Dimensions of Bore and Stroke of Each Type and Cycle.

AN interesting feature brought out by the data shown below is the relative size of the bore and stroke of the heavy duty motors manufactured to-day compared with the medium duty, and those in turn compared with the light-weight motor. This shows very well, indeed, why, for a given horsepower, the heavy duty motor must have so much greater bore and longer stroke than the light-weight motor of the same power. Carrying this reasoning along still further, it shows why the automobile motor is of even smaller dimensions than even the light-weight marine engine.

The relation of bore and stroke also changes as we pass from the heavy duty, through the medium to the light-weight machines. In the first mentioned, we note the stroke is invariably greater than the bore, while in the one, two, and three-cylinder, two-cycle light-weight motors, we find the bore greater than the stroke. In four-cycle practice the bore is seldom the larger.

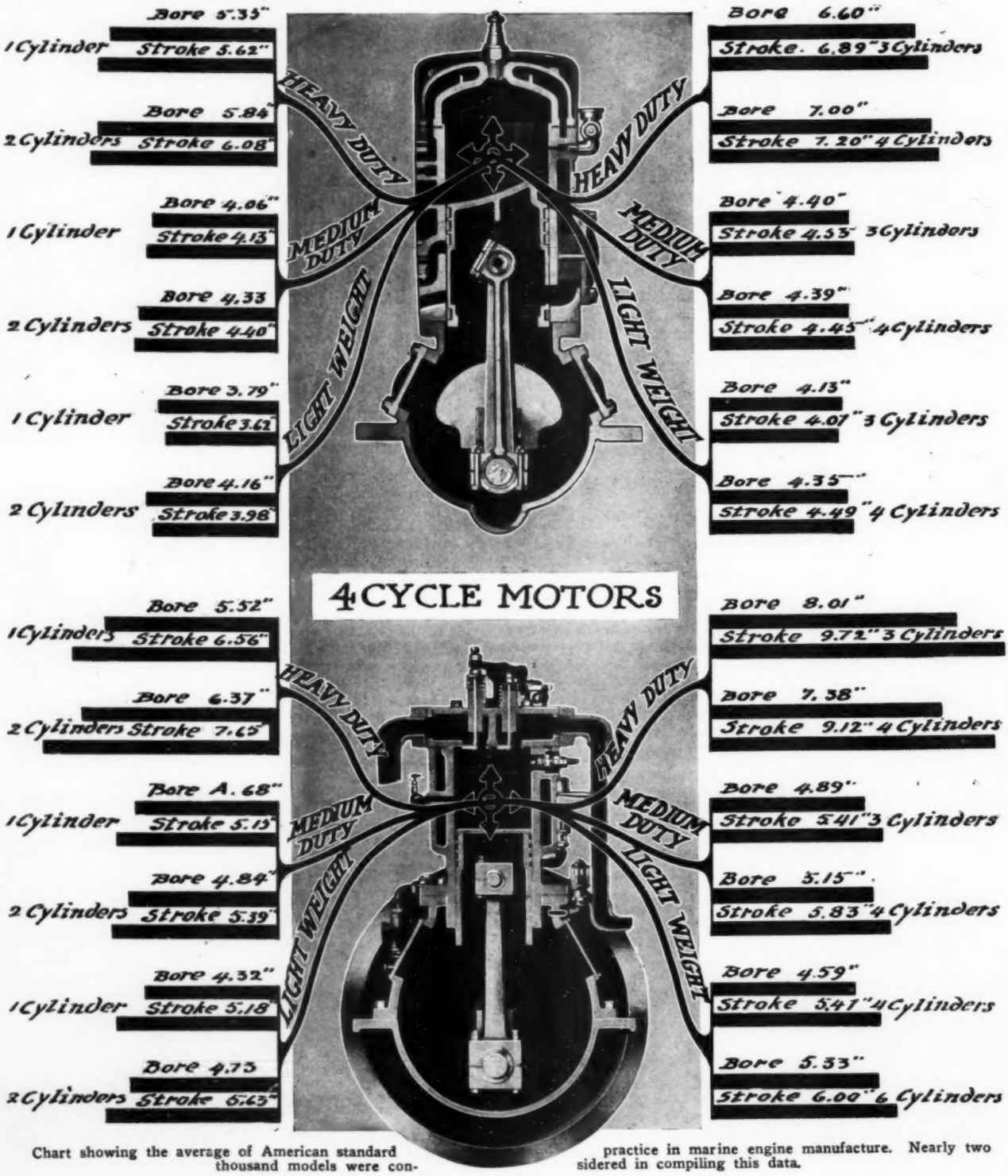


Chart showing the average of American standard practice in marine engine manufacture. Nearly two thousand models were considered in compiling this data.

Air Propulsion in France.

The Utility of the Air Propeller as Applied to French Gliders. High Speed and Ease of Operation in Shallow, Weedy Waterways Among the Advantages Claimed for Them.

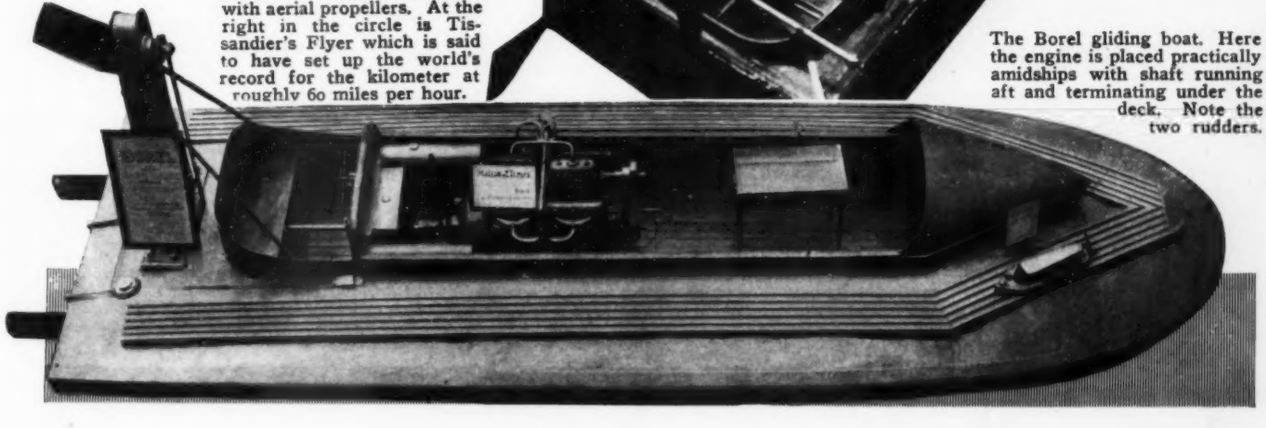
ALTHOUGH devoted primarily to air vessels, the Aeronautical Salon held recently in Paris had something of interest to the marine motorist as well. Gliding boats formed an interesting section of the exhibit. The Lambert Co., which has been doing quite an important business in gliding boats with aerial propellers, had two craft on view. One of them, Flyer, with which, it is said, M. Paul Tissandier set up a world's record for a kilometer at approximately 60 miles per hour, is powered with a 200 h.p. 18-cylinder Gnome motor, driving a double chain. The other, a slightly smaller boat, is driven by a Gobron 40 h.p. motor. In this, Tissandier has taken long journeys up the rivers Seine and Rhone. A number of the bigger boats of this type have been sold in South America, where shifting river bottoms make navigation with ordinary boats difficult.

The Nieuport (above) and Tellier gliding boats at the Paris Aero show.

Nieuport had two gliders with aerial propulsion on exhibition; Bleriot had one of his models, and Borel showed several gliders with accommodations for passengers.

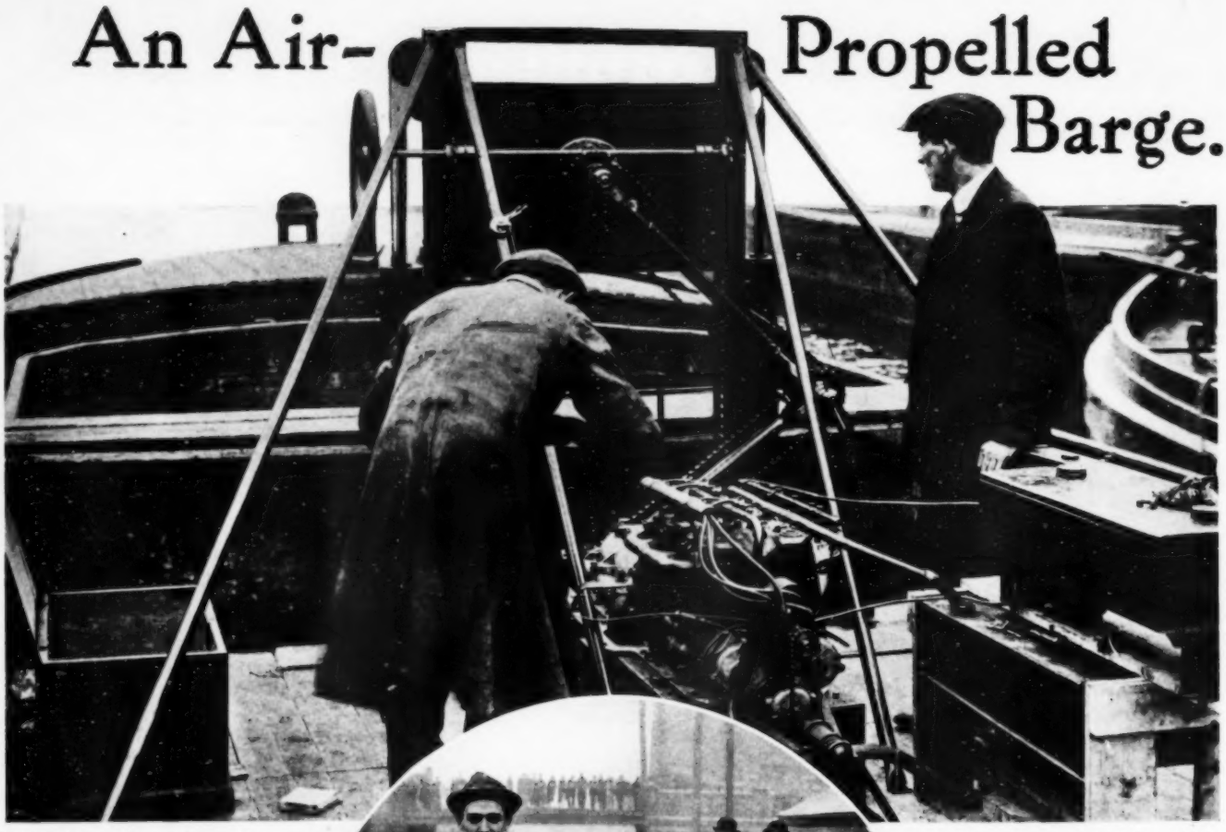
An interesting glider with four-bladed propeller and motor set well aft.

Part of the exhibit of boats with aerial propellers. At the right in the circle is Tissandier's Flyer which is said to have set up the world's record for the kilometer at roughly 60 miles per hour.



The Borel gliding boat. Here the engine is placed practically amidships with shaft running aft and terminating under the deck. Note the two rudders.

An Air-Propelled Barge.



Mechanics fitting up the engine. Observe the clever method by which the propeller can be raised or lowered and the chains yet kept taut.

CANAL BARGES are among the very few things which have so far escaped modernization, and now the first step has been made with them. On the Surrey Canal, England, experimental trials of an air-propelled barge were made recently, and, although the motor used was an old one and not tuned up to the test, the trial showed that aerial propulsion for light-draft barges has promising possibilities. The makers of this device, Messrs. L. Blin Desblads Co., of Westminster, do not claim that their method is superior to under-water propulsion where there is plenty of draft, but they do advance the opinion that air-propulsion is better than driving a screw propeller in a tunnel.

The 8-foot propeller, and H. S. Pupin, inventor of the system.

The power plant was worked out as follows for this test: An old 16 h.p., four-cylinder Decauville motor was rigged to an aerial propeller 8 feet 3 inches in diameter with about 6 feet 2 inches pitch. The engine turned over at 900 r.p.m., but the propeller, by a series of chain drives, was made to turn at only 700 r.p.m., it being believed that better results would be attained at this speed than at a faster rate. The feature of the installation which had the most interest was the method of raising and lowering the propeller. This was accomplished by having two chain drives arranged in elbow fashion, the lay shaft being mounted in a quadrant to one side. When the propeller was lowered the lay shaft was pushed along the quadrant, thus keeping the chains at constant tension.

Suggestions for Handicapping.

What One Racing Man Thinks of the Antiquated Rules Now In Use. Correcting the Trial Performance System So That Jockeying Will Be Eliminated.

By William Glader.

HAVING read an article in your recent number on Rules for Handicapping Motor Boats, I was amused at the suggestion of the lemon game and other games, given to your St. Charles correspondent. You are right, however, when you say you are ready to throw up your hands in the matter, as there are no known rules which work out satisfactorily. This is principally due to hanging on to some of the original silly motor boat rules, such as restricting the finish, allowing a 2% of time, barring a timepiece, and allowing points. These rules destroy the features of a race. To have a real race you must have an open finish and you must offer a premium for a beaten boat to push the winner to the last extreme, without incurring a penalty. Therefore, I wish to offer a set of rules intended for motor boat clubs wishing to give series races, which will work out to the satisfaction of boat owners and give excellent sport and excitement:

RULES.

A motor boat owner wishing to engage in races must give to the regatta committee, in writing, the best time his boat can make over the course. This given time shall be known as *trial time*.

All races shall be series (or heat) races. Best two in three. A boat winning two heats wins the race. In case of a split in heats, the two boats having won a heat shall run off for the race.

No official time shall be taken of any boat in the race, except the boat crossing the line first. In case of disqualification, the next boat shall be declared winner of the heat with notation (no time taken).

A boat winning a heat in faster time than its *trial time* shall be penalized an amount equal to such excess, but not disqualified from the heat for such excess speed. Its new time, plus the penalty, shall stand as its best time thereafter and shall be its handicap time in its next race or heat.

Every boat finishing the heat after the first

(*Continued on page* 44)

PRIZE CONTEST
IN QUESTIONS & ANSWERS

Advantages of Bilge Keels.

THE PRIZE CONTEST—Answers to the First Question in the December Issue.

Bilge Keels for the Moderate Size Cruiser.

The Prize Winning Answer.

BILGE keels are fin-like pieces of wood or metal fitted on each side of a vessel at the turn of the bilge, running fore and aft for about one-half the overall length of the hull and terminating equally distant fore and aft of the amidship section.

Their purpose is to reduce the rolling of a vessel while at the same time offering the least possible resistance to its forward motion, and while they are fitted extensively on large ocean-going ships they are seldom seen on the moderate-sized cruiser or yacht. Yet they would be a decided advantage on a small boat of fine lines and rather semi-circular sections, especially if it is to be used on unprotected waters and for open sea work.

The length of the bilge keels should be about one-half the length of the boat and the width from four to eight inches for about three-quarters of their length and neatly tapered at the ends about as shown in the accompanying sketch. To obtain the least resistance to the forward motion of the boat, the line of the intersection of the centerline of the bilge keels with the hull planking should be parallel to the mean trim line when the boat is in cruising condition, with all weights on board.

The athwartship location and width of the bilge keels depend largely upon the shape of the midship section. In Fig. No. 1 of the accompanying sketch let A B represent the mean water line, C D the half-width of the section over the planking, and E F a line parallel to the mean waterline and tangent to the planking where it intersects the keel. Draw a line through the intersections of A B with the centerline of the section C D and E F, and where this line intersects the hull at G, erect the bilge keel at right angles to the hull at this point. Another method is to find the central point on the turn of the bilge at the midship section by actual measurement and erect the bilge keel at right angles to the point thus found.

As stated above, bilge keels for small and moderate-sized boats vary in width from four to eight inches, depending upon the size of the boat, but it should be borne in mind that they should not be so wide as to project beyond the side of the boat or below the keel as they would be in danger of damage when tieing up alongside a dock or in case the boat runs aground.

There are various methods of fastening the bilge keels to the planking. For large cruisers a tee bar can be bolted or riveted through the ribs or a wooden keel can be fitted as shown in Fig. No. 1. R. G. SUGDEN, Hampton, Va.

QUESTIONS FOR THE APRIL ISSUE.

1—Discuss vibration in a boat and suggest a means for correcting or lessening it.
Suggested by D. G. Stanbrough, Norfolk, Va.

2—Explain with drawings the best method of replacing an injured plank in a boat.
Suggested by A. D. Sawdry, Cleveland, Ohio.

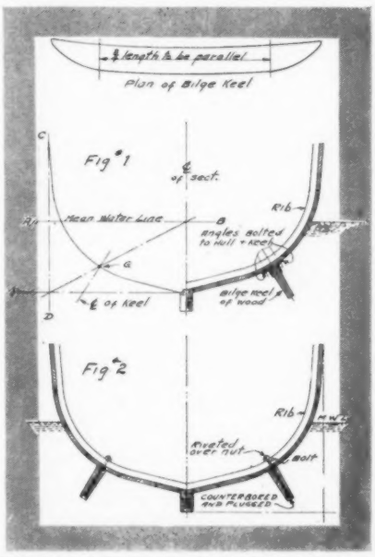
3—What things did your experience of 1913 show should be attended to in fitting out this year that were omitted last spring.
Suggested by A. P. B., Boston, Mass.

RULES FOR THE CONTEST.

Answers to these questions, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (*a*) In our hands on or before February 25, (*b*) about 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 25th of February.

The prizes are: For each of the best *answers* to the questions above, *any article* advertised in *this issue* of MoToR BoatinG, of which the advertised price does not exceed $25, or a credit of $25 on *any article advertised* in the *current issue* of MoToR BoatinG which sells for more than that amount. *(There are three prizes, one for each question, and a contestant need send in an answer to but one if he does not care to answer all.)*

For each of the questions selected for use in the next contest, *any article* advertised in *this issue* of MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in *this issue* of MoToR BoatinG, which sells for more than that amount.



Method of locating and fitting bilge keels suggested by Mr. Sugden.

Adapted on Ocean Going Large Boats.

IN PRINCIPLE, the bilge keel is exactly what its name implies, a longitudinal keel projecting just below the turn of the bilge at right angles with the planking, and its function is to present an obstacle to the rolling of the vessel's hull, counteracting somewhat both the unduly deep and protracted rolling of the deep-draft, easy-lined hull and the shorter roll and violent recovery of the shallow, hard-bilged model.

The action of the bilge keel is the same on vessels of all sizes, the smallest motor boat being as favorably affected by their adoption as the heaviest battleship or the longest ocean liner. It need hardly be said that they must be placed exactly parallel with the stream lines which leave the vessel's underbody in directions governed by the shape and proportions of the individual model. Excessive resistance will otherwise result, and the vessel's speed will be seriously diminished. The accurate placing of bilge keels is not an easy problem, and the best naval architects give this matter careful consideration. Experiments with a small model are probably the surest guide, although an intelligent study of the boat's lines will go far toward indicating the correct location.

On a motor cruiser of say 35 feet overall, a length of one-half that figure, or 17 feet 6 inches, would be a good proportion for the bilge keels. These should be placed about amidships, allowing the same distance fore and aft of their position. They should project beyond the boat's planking about 7 inches at the widest part, narrowing down fore and aft to about 3½ inches in width and with both ends well rounded over to prevent their catching on lines or other obstructions. A thickness of 2½ inches would be about right where the keel joins the hull, tapering to 1¼ inches on the outer face, which latter should be protected by half-oval galvanized iron the whole length, for the bilge keels must withstand much strain and abuse in case the boat should ever take the ground. The keels should fasten on outside of the planking, otherwise a heavy shock would probably open up the seams along the keel and might result in the loss of the vessel. One-half inch galvanized bolts, with nuts and washers inside the hull should be used for fastenings. These should not go through the vessel's timbers, as of course such large holes would cut them away to a dangerous extent. A heavy bilge stringer of oak should be notched over every frame and fitted against the planking inside the hull the entire length of the bilge keels.

ALLAN O. GOULD, Portland, Me.

When you send in your answers you must state what you will take for a prize, should you win one.

Spark and Throttle Controls.

The Proper and Best Installation of These When the Motor Is Located Some Distance Away. Several Different Methods to Suit the Many Requirements of the Average Boat.

THE PRIZE CONTEST—Answers to the Second Question in the December Issue.

A Complete System.

THERE is perhaps no part of a motor boat equipment receiving so much attention from designers and manufacturers just now as the departments given over to controls and controlling accessories. Since the marine motor has attained to its present-day state of perfection, requiring but little attention, motor boatmen have seen fit to place the power plant in many different "out of the way" places. It may be that the motor is housed under a neatly finished box, beneath a water-tight hood, or below the deck, and yet at some little distance from the operator's seat. The automobile traffic has brought forth and evolved to perfection unlimited accessories for operating throttle and timer levers, many of which are now used to advantage in up-to-date craft.

Numerous small boats have a "dashboard" or bulkhead control arrangement similar in design to those of the modern automobile. Others are equipped with auto steering devices having spark and throttle levers on a segment within or below the wheel, just the same as the modern car. These small articles of equipment are, however, not always available when wanted, and it often occurs when installing an outfit that just the fitting you must require to complete your device is not to be had in the local market. Such being the case, small diameter brass rods flattened and drilled, brass strips bent or filed to various irregular shapes, threaded tubing, etc., can all be worked up to connect with loose joints and fill in nicely.

The accompanying sketches show how some of these standard materials can be made into simple yet efficient and inexpensive spark and throttle control connections.

In the case of reverse gear controls, the outside designed and manufactured accessories are not quite so far advanced. Hence it is up to the boat owner himself to work out and rig up a scheme that will meet his requirements. Often times fittings similar to those used for the engine controls, only on a much larger and heavier scale will do, and in many cases the device when completed will be very simple, as shown by the reverse gear control sketches. At any rate, it is worth your while at this season of the year to start out and "dope up" some sort of simple controlling device to use in your craft next summer. In designing the apparatus, however, aim to make the thing as simple as you can, securing the desired movements with as little lost motion as possible.

C. E. BRADLEY, Fall River, Mass.

Deck Controls.

IN the drawings herewith two modern types of deck controls are shown. One with the auto steering wheel having ratchet levers attached which operate the push rods to the carbureter and timer, the direction of these push rods being changed by means of heavy bell cranks.

The reverse gear is operated by a pneumatic clutch control which consists of a cylinder having two pistons similar to a double acting pump, these pistons working on compressed air which may be supplied from the whistle tank. The air is conveyed by means of copper tubing to a valve located on the bulkhead handy to the steering wheel. A small lever admits the air pressure to either end of the cylinder, causing the pistons to move forward or aft, and this power is transmitted to the reverse gear by means of a lever attachment.

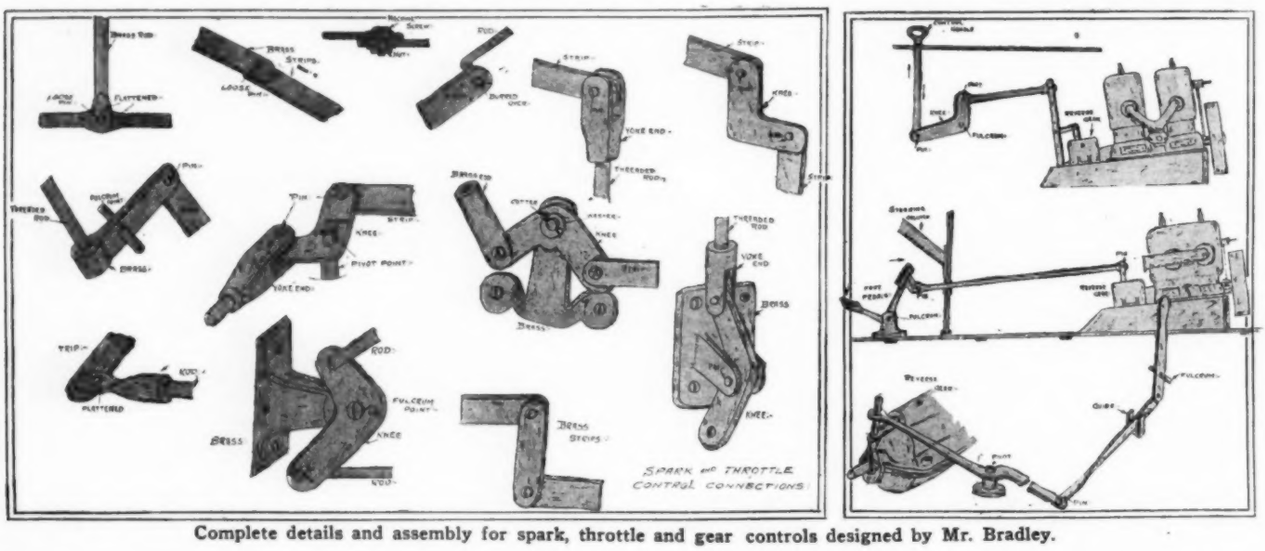
In the other method the ordinary steering wheel is used with the controls attached to the bulkhead and the reverse lever operated by means of an auto steering wheel which is fitted with a sprocket wheel at the base working a sprocket chain and push rods or wire rope.

These types actuating the reverse eliminate the necessity of cutting a slot in the cockpit floor for the reverse lever, an undesirable feature in cruisers as it allows quantities of water to work below and this lever sticking up through the deck is usually very much in the way in boats with self-bailing cockpits or of the bridge deck type.

There is a large variety of bell cranks, ratchet levers, universal joints and ball-and-socket joints on the market that may be obtained, which will be found satisfactory for practically every individual case. The main features required are solidity and the elimination as far as possible of lost motion. Bell cranks should be substantially bolted to bulkheads or other suitable support and if sheaves are used, they should be large and grooved to receive the wire.

Bowden wire, which is extensively used on autos and is a wire run through flexible tubing and packed in grease, is an excellent article for controls as it will take any number of quick turns without kinking and a push at one end will deliver the same power at the other regardless of the number of turns.

H. W. LOWEREE, 73 Maiden Lane, N. Y. C.



Complete details and assembly for spark, throttle and gear controls designed by Mr. Bradley.

Remote Controls.

THE installation illustrated was designed for and installed on a cruiser. This equipment, together with a rear starter, places the entire control of the boat at the steering station. The various rods, bell-cranks, forked ends, etc., with the exception of the vertical shaft, were made from discarded automobile parts. The installation has stood the test of 1,800 miles cruising during the past season without a moment's attention. In addition to the controls illustrated, a flexible wire is brought from the carbureter flushing pin to the steering station while for winter service it will be found that starting can be made easier by bringing a lead from the butterfly valve in the air intake, thus permitting a rich charge being drawn into the cylinders.

The reverse gear was selected with a view to the installation illustrated and as shown has side lever control. If a vertical lever gear is used, a bell crank can be installed in a horizontal plane and linked to the gear operating lever and vertical shaft, to transmit the motion. It

will be noted that this installation relieves the cockpit of the unsightly reverse gear lever which is always in the way and is a constant source of danger in rough weather. The vertical shaft installation permits of a water-tight cockpit.

In the installation of the timer and throttle controls care must be taken to make all parts a neat fit to eliminate lost motion. The most satisfactory results will be obtained by spring loading the controls with a light coil spring so set as to be in tension under all conditions of lever setting.

D. G. STANBOUGH, Norfolk, Va.

An Open Boat Installation.

THE jack shaft (Fig. 1) may be placed either fore or aft of the gear, as the conditions permit, and the shaft standard (A. A.) may be made to fasten either on top or sides of engine bed timbers or gear base. Each lever (B. C.) should be of the same length, *i. e.*, the distance between center of each hole should be one-half the distance from hole in gear lever to point below floor, where connecting rod is fastened on. The length of connecting rod (D) depends upon distance between lever (C) and gear lever. The control lever, no matter how far placed from reverse gear, may be connected to jack shaft lever (B) by means of a connecting rod; a piece of hollow wrought steel or iron tubing, flattened and drilled at both ends, is best, as it will not bend or kick so easily.

Fig. 2A shows a convenient means of connecting spark and throttle levers. The hollow tube and solid rod C and D lie under the floor and extend from right below one side of motor to a place beneath or near operator's seat. Two levers (A and B) are placed on both ends of the rod and tube and are connected to spark and throttle levers or motor, by means of connecting rods and bell cranks. The two levers at operator's end of line may be connected to either bulkhead control levers or auto steering wheel with center motor control levers by means of connecting rods and bell cranks if necessary.

The tube (C) should have an easy working but firm bearing every four feet, and the pipe cap (E) should fit moderately over rod (D). The lever (A) is a split lever and is clamped to tube (C) by means of bolt (F) and either lever may be set at any angle or made in any length to suit the requirements.

The same device just explained may be used on any small cruiser with a one-man control. The reverse gear connecting rod under the floor should extend to a point under the wheel and may be connected to gear lever or deck by means of a second rod and jack shaft or bell crank. The spark and throttle controls may be connected in the same manner.

VERN MANCHESTER, Fountain, Michigan.

A Cable Control.

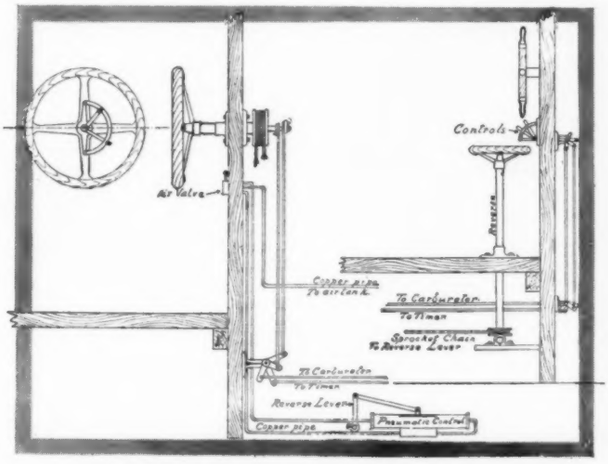
IN designing means for controlling the spark and throttle at some distant point, all unnecessary turns and bends in the connecting members should be avoided, while in reverse gear control, strength and rigidity are the principal consideration. The accompanying rough sketches show means for accomplishing the results sought.

Fig. 1 is self-explanatory and is probably familiar to many. Fig. 2 is a method which will be found satisfactory whether the reverse gear is fore or aft the controlling point. A piece of wrought iron, say ⅜ x 1½ may be used for the lever and had best be pierced hot for the pivot bushing, as this method will not remove stock and cause weakness as will drilling. After drilling a bolt hole in the end, the proper distance from the center for the connector, the lever should be galvanized.

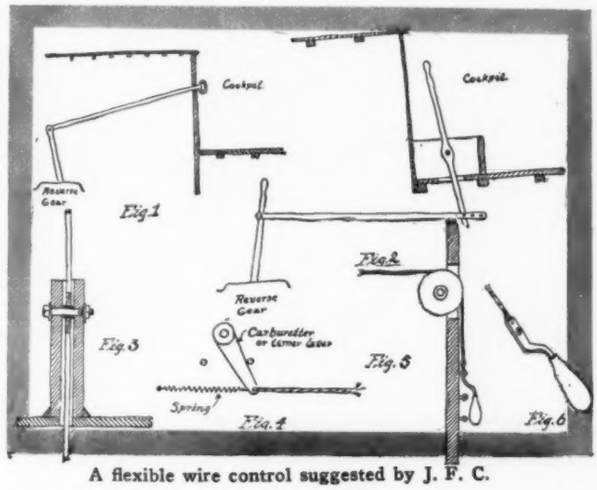
Fig. 3 is a section through the wood housing at the point where the lever is pivoted. It will be noted that a bushing made from a piece of pipe is slipped over the bolt for the lever to turn on. By this construction the housing may be placed quite close to the lever without danger of binding, as the bushing will ensure clearance. The size of the bushing should be determined of course before the lever is pierced. The bolt, nut and washer should be galvanized. If the housing is properly fitted and fillets used in the corners this scheme will be found quite satisfactory in a self-bailing cockpit.

The spark and gas may be controlled at a considerable distance from the motor by means of some small bronze cable. Fig. 4 shows a lever, which may be either that of the timer or carbureter, and the cable attached. A brass spring is attached in the manner shown. This should be so arranged as to tend to pull the lever toward the slow position as an accident to the control would then manifest itself by slowing the engine rather than by speeding it up. Care should be taken to provide suitable stops to keep the movement of the lever within limits in case such stops are not already there. Fig. 5 shows a very simple means for taking care of the other end of the cable. A piece of sheet brass is formed up as in Fig. 6. The two holes are drilled and a wood handle is attached. The cable is attached as shown, after being led over the grooved pulley. A row of round head brass screws are arranged in line with the pulley, and control is effected by slipping the brass piece over the different screw heads. In leading the cable to the engine, deep, grooved pulleys should be used wherever a turn is necessary. A more finished appearance may be acquired by using one of the standard spark and throttle controls now on the market. In that case it would be necessary to attach a spring to each hand lever in much the same manner as the spring shown in Fig. 4 to counterbalance the effect of the latter spring. It will be seen that the springs prevent all lost motion and insure an even control.

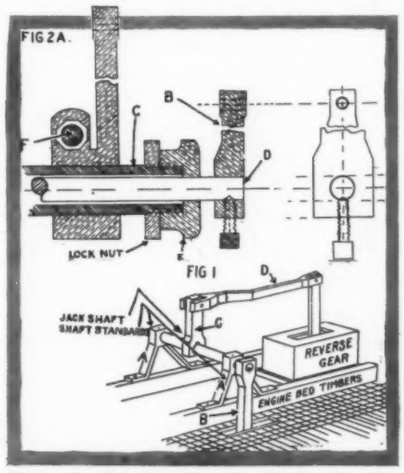
J. F. C.



Mr. Loweree's neat and effective controls.



A flexible wire control suggested by J. F. C.



Controls placed under the flooring in Mr. Manchester's design.

MoToR BoatinG's Prize Contest is proving of the greatest assistance and value to thousands and thousands of motor boatmen every month, and while it is the best thing of its kind published anywhere in the world we want to make it better each month. One does not have to be a talented writer or artist to compete or even win a prize, and we want you to feel that you have just as good a chance to win one of the many prizes, as some of those who have won dozens of them within the last few years.—EDITOR.

Getting the Motor Aboard.

Means Whereby the Work of Raising a Heavy Motor is Made Light and Easy. The Equipment Necessary and Several Ways of Rigging It Up.

THE PRIZE CONTEST—Answers to the Third Question in the December Issue.

Using the Chain Hoist.

IN a small cruiser when the motor weighs not over two or three hundred pounds with the fly-wheel removed, the motor is easily on board by sliding it along a plank. Two or three good men will handle this motor easily. It is the larger motor that requires a hoisting rig. Boat yards have either a boom derrick or skew legs at their command, but the amateur builder must rig his own hoist or part with quite some of his hard-earned cash, to hire a rigging gang for the job.

If there are a couple of good trees or a heavy timber above to fasten the tackle to, you will not have to rig very much. If nothing substantial is available, rig two skew poles to form skew legs alongside the boat, so that the motor may be hoisted clear and lowered on its foundation. The poles should be at least three times as long as the boat is high. Fasten them securely at the top, allowing a spread of about one-third their length, dig a hole for the foot of each, to prevent their slipping. Use two long guys, having slightly more spread than the poles and fasten them in such a manner that they may be slackened without danger of slipping. Three times around a tree or post accomplishes this nicely. One guy tied straight back is not as good, but it will answer in some cases. A slight lean towards the boat should be allowed the skew poles.

A chain around both poles makes the best sling, as it will not break, but a rope sling can be used without trouble by placing a rod through the hook on the tackle to hold it.

A chain block, if available, will be the easiest hoist to handle. If necessary, a man can exert a pulling force equal to his own weight, the block automatically holding the load which is sufficient to raise the capacity of the block. If pulley blocks are used, rig a four-fold tackle, and for a heavy motor, hook a luff tackle to the fall line and put a match block at the foot of one of the poles. By hooking on a three-fold luff tackle you increase the pull on the fall line of the hoisting tackle three times. The pull on the fall line is increased in direct proportion to the number of strands leading from the movable block. With two hundred pounds' pull on the fall line of a four-fold tackle, you could lift 800 pounds.

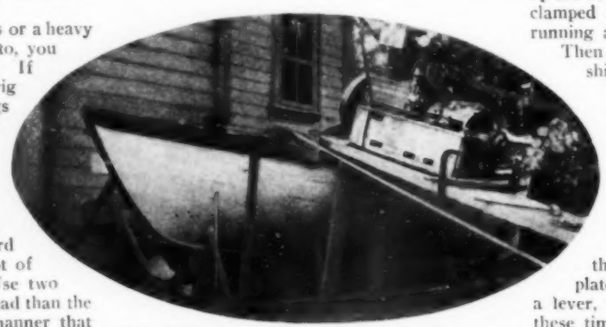
The safe working load for a new ¾-inch diameter hemp rope is 992 pounds, and a four-fold tackle is safe with four times that weight. The strength of old rope is an unknown quantity.

Unbolt the motor from the skids and string it with two ropes tied close, putting one around each way, and taking a turn on the hooks. This will prevent slipping and give twice the strength of one rope.

When all is ready and a good crew present, hoist away until the motor is over the boat. If the motor is in the cockpit or the cabin not yet on, lower away until the motor rests on its foundation. It would be advantageous to put the motor aboard before building the cabin, but if this is not convenient, a tackle fastened forward inside the boat will pull the motor in nicely as it is being lowered. Let one man superintend the job, and keep a lookout that things go right.

If the boat is in the water, this rig can be set up on the dock and the same general plan carried out. A little care to have strong timber, good lines, and make everything fast securely, and there will be no danger of dropping the motor or breaking anything. A motor can be put aboard in this manner without even a jar. Be sure you're right, then go ahead.

W. B. MOORES, Newburgh, N. Y.



Mr. Parker's method of sliding the new motor aboard.

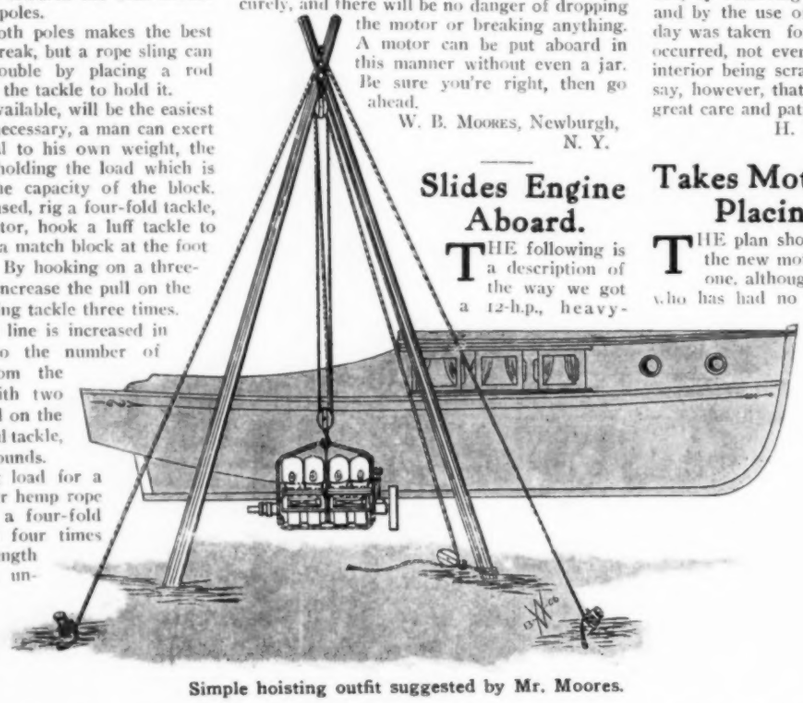
Slides Engine Aboard.

THE following is a description of the way we got a 12-h.p., heavy-duty, Buffalo engine, weighing 1,400 pounds, into a 28-foot cruiser. The fact that the cockpit floor was laid and the cabin roofed over made the job more difficult. A couple of second-hand timbers 2 in. x 14 in. x 25 ft. long were obtained and placed up against the coaming, as seen in the photograph, thus forming a long runway. A heavy block and tackle were then rigged up, and a smaller tackle on the end of the heavy rope made a very powerful combination for hauling the engine up the runway. The fixed end of the small tackle was made fast to a tree-trunk, and the fixed block of the heavy tackle was fastened around a stanchion in the shed back of the boat.

With very little effort the engine was hauled up the runway, a heavy block being continually clamped on behind it in order to prevent it running away in case the rope should break.

Then two heavy timbers were laid athwartship across the coaming and the engine hauled onto these, thus bringing it directly over the center of the cockpit. Heavy blocks were then piled up under the engine, and it was lowered onto the cockpit floor by prying out these blocks one at a time. The crating around the engine bed was then removed, and a couple of long timbers extending into the cabin were shoved under the bed plate. Using a long, heavy oak timber as a lever, the engine was slowly pushed along these timbers into the cabin, the cabin beams being cleared by half an inch. When directly over the engine bed, the long timbers were removed, after blocking up under the bed plate; then the engine was lowered onto its bed, by removing these blocks one at a time and by the use of the oak lever. About one day was taken for this work and no accidents occurred, not even the varnish on the cockpit interior being scratched. It is unnecessary to say, however, that a job of this kind requires great care and patience.

H. H. PARKER, Oakland, Cal.



Simple hoisting outfit suggested by Mr. Moores.

Takes Motor Apart Before Placing on Board.

THE plan shown in the sketch for getting the new motor aboard is a perfectly safe one, although it may not look so to one who has had no experience in lifting heavy machinery by this method. It is not a new invention but has been used for many years in getting aboard engines, boilers, heavy spars and all such work. Considerable tackle and gear will be required, and this would prove expensive if bought for a single job. The transfer companies that do hauling and moving in all cities of any size usually have an equipment of this kind which can be obtained.

A stout pole about 20 or 25 feet long will also be needed. A small telephone pole that is not working will do nicely. double blocks with about ¾-inch rope should be used for lifting the engine also on the guy ropes. There is to be three of these guy ropes, although only one is shown. The other

two are placed, one at each side, to prevent the pole from falling from that direction. These two need not be quite so heavy as the one shown, which takes most of the load. They could also be used with only a pair of single blocks.

Care should be taken to have the foot of the pole placed so it cannot slip. This is easily done by digging a small hole, if the pole stands on earth, but if on a plank or concrete pier, some other method must be used, such as lashing to a cleat or ring bolt.

In placing the pole, a small line should be attached to the inclined side and kept taut to prevent the weight of guy ropes from throwing the pole over backwards before the engine is hoisted.

Have all the gear of ample size and give the three guy ropes plenty of spread. Be sure that they are made fast to something that cannot pull out. You will then find this rig both safe and convenient.

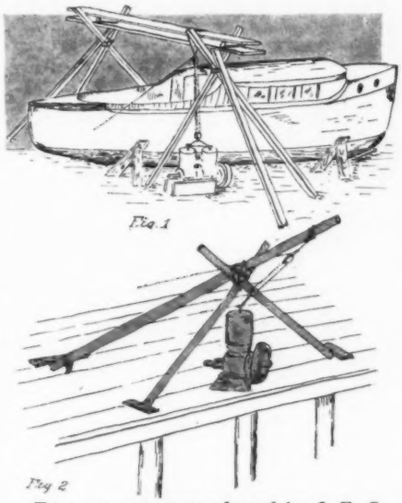
Another plan for getting the motor aboard is to take it apart and carry it aboard in sections. This method was used by the writer recently. The cylinders, fly-wheel, and reverse gear were removed. Then two men were able to carry the crankcase aboard. The engine was then reassembled. This takes some time, but in this case, it seemed easier than collecting the necessary gear, as the motor was not a very large one.

C. H. CHRISTIE, Saginaw, Mich.

Cheap but Effective.

TO get the motor safely aboard the craft without injuring the machine itself or disfiguring the finished woodwork seems a difficult task to many ordinary amateur yachtsmen. If the boat is quartered in some up-to-date ship yard with a well equipped boat shop adjoining, the job is made somewhat lighter with the aid of the portable crane found in such a place. It, however, more oftener happens that the boat is stored in some out-of-the-way spot with very few facilities at hand for the raising and installing of a heavy motor, hence the job is considered tedious. It was just such a coincidence as this which inspired the simple yet successful method as illustrated in the sketch at Fig. 1.

It was an easy matter to construct a temporary cradle under the boat and insert rollers below the cradle. A sort of scaffold or gallows was next erected directly over the engine bed, similar to that shown in Fig. 2. The construction of this is too simple to need any detailed instructions, though, of course, one can elaborate on this device, if necessary. A two-sheave safety hoist was next rigged up and securely lashed to the cross-bar of the gallows. The boat was then pushed forward over the rollers just enough to clear the scaffold, the motor brought under the bar, and firmly fastened to the hoisting apparatus. The engine was then raised above the boat which was next rolled back to its former position, or far enough to allow the lowering of the motor on the bed. By raising the engine slightly several times and adjusting the same to the required position, perfect alignment was soon secured.

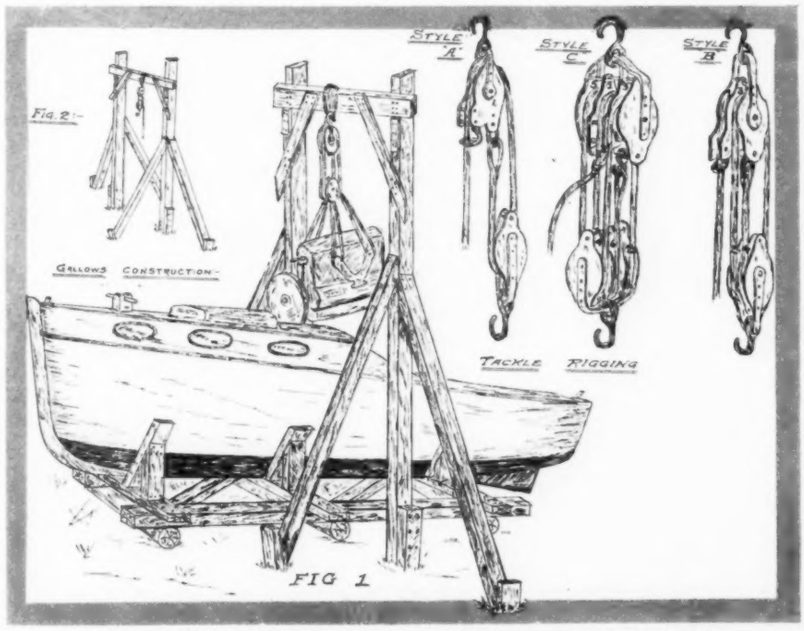


Two arrangements adapted by J. F. C.

When using a device such as this, by all means take care to see that the scaffold and rope are amply strong to hold the weight of the motor. The size of timber and rope will, of course, vary in accordance with the weight of the engine. If you do not happen to have timber enough on hand to erect the scaffold, the necessary amount can be hired for a small sum at most any lumber yard on the agreement that you pay the regular price for the lengths either cut or broken.

In selecting your tackle rigging, endeavor to secure a hoist of the patent locking type. This will prevent your engine from falling should you lose your grip when hoisting the same. The sketch illustrates three forms of tackle rigging for such a lifting requirement and the tabulated data should enable you to select a hoist that will fulfill your wants. This style of hoist is by far less expensive than the differential chain hoist and will do the work just as well. The prices given on the table are for the complete hoist minus the rope.

C. E. BRADLEY, Fall River, Mass.



Perhaps a little complicated yet a sure method, suggested by Mr. Bradley.

A Good Scheme for the Amateur.

OF the various jobs which fall to the lot of the motor boat enthusiast probably none is more subject to conditions and means at disposal than getting the engine aboard. Often a job of this kind is a simple matter when the boys are around, but is a difficult proposition for one or two.

Let us assume that the boat has been drawn up, or to make the conditions more interesting, suppose the boat has simply been beached. It is hardly necessary to state that the replacing of an engine, under these conditions requires a little scheming, if the finish of the craft is to be preserved, and perhaps serious consequences avoided. Figure 1 shows how an engine may be taken in or out of the cockpit without endangering the boat in any way, or subjecting it to strains. A heavy plank is propped up in the manner shown one set of props lying quite close to the side of the boat, while ample space should be provided on the other side for hauling up the engine. A second plank is laid over the first with rolls between. These may be short pieces of pipe. A few nails will keep the lower plank in position on the supports which in turn may be lashed together at their crossing point. After hanging the tackle in the manner shown, the engine may be hauled up to the required height and then by means of the rolls slid over the cockpit where it may be lowered. Eye-bolts will be found very convenient in attaching the tackle to the engine, but these should be very carefully fitted well into the spark plug hole to avoid fouling. Figure 2 shows how old spars may be used to lower an engine from a wharf. These should be well lashed together, and the end of the long one on which comes the heaviest strain may be effectually secured by wire carried between the boards to a cross piece underneath. On the whole, it is a matter of good judgment, and with the foregoing suggestions, the average man ought to have little difficulty in getting through the job in a satisfactory manner.

Be sure that all your apparatus is strong enough and then proceed slowly, planning every step carefully before beginning. Everything will come along in good shape

J. F. C.

Exhibitors at the New York and Chicago Motor Boat Shows.

An Index to the Big Exhibitions in Madison Square Garden and the Coliseum.

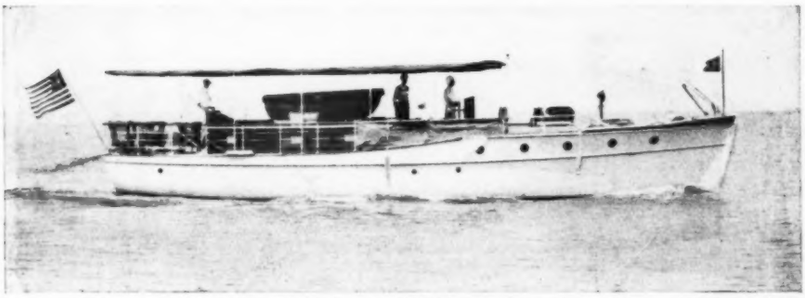
The names below are of those who have taken space in the two motor boat shows up to the time of going to press with this issue. Some few additional exhibitors will undoubtedly be seen at both as there are always late changes and newcomers. But even so, the list below will be found to be practically complete when the shows open. After each name is indicated whether that exhibitor will be found at Chicago only, at New York or at both shows.

The American Brass Co. (Ansonia Brass and Copper Branch).....New York
American Launch Co....New York
American Speed Indicator Co. .....New York
Anderson Eng. Co.....Both
Apple Electric Co.....New York
Berry Bros.....Both
Blackley Engine Co.....Both
Bosch Magneto Co.....Both
The Bridgeport Motor Co., Inc.....New York
Buffalo Gasolene Motor Co. .....Both
Bruns, Kimball & Co....New York
Byrne Kingston & Co., and Kokomo Elec. Co.....Both
Caille Perfection Motor Co. .....Both
A. S. Campbell Co.....Both
Cape Cod Power Dory Co. New York
The Carlyle-Johnson Machine Co.....Both
George B. Carpenter & Co. .....Chicago
Chicago Varnish Co.....Both
Clifton Motor Wks.....New York
Columbian Brass Foundry .....Both
Conn. Telephone & Elec. Co .....New York
James Craig Eng. & Machine Wks.....Both
David B. Crockett Co....New York
Curtiss Aeroplane Co....New York
The Debevoise Co.....New York
F. W. Devoe & C. T. Raynolds Co.....Both
The H. C. Doman Co....Both
C. D. Durkee & Co.....Both
Edison Storage Battery Co. .....Both
G. D. Eighmie.....New York
Electric Goods Mfg. Co..New York
The Elco Company.....Both
Elec. Tachometer Co....New York
Erd Motor Co.....Both
Evans Stamping & Plating Co. .....Both
Evinrude Motor Co.....Both
Fairbanks - Morse & Co. .....New York
Fay & Bowen Eng. Co. .....New York
Ferro-Machine & Foundry Co. .....Both
The Francke Co.....New York
The Frisbie Motor Co...New York
Fulton Mfg. Co.....Both
Gas Eng. & Power Co. and Chas. L. Seabury & Co., Cons. .....Both
Gasoline Eng. Equipment Co. .....New York
Chas. H. Gillespie & Sons. New York
Generator Valve Co.....Both
L. Gooley.....New York
Gray-Hawley Mfg. Co...Chicago
Gray Motor Co.....Both
W. S. Hall Co.....New York
Halsey, J. K.....New York
Hartford Suspension Co..New York
Havoline Oil Co.....New York
Haynie, W. R.....New York
Heinze Elec. Co.....Both
Higgins & Seiter.....New York
The Holmes Motor Co...Both
Hyde Windlass Co.....Both
Janney, Steinmetz & Co..New York
Jeffery-Dewitt & Co.....New York
The S. M. Jones Co.....Both
David Kahnweiler's Sons. New York
Kermath Mfg. Co.....New York
L. O. Koven & Bros.....Both
Lamb Engine Co.....Both
Geo. Lawley & Son Corp. .....Both
The Lewis Elec. Welding & Mfg. Co.....New York
Loew-Victor Eng. Co....Both
Luders Marine Const. Co. New York
Chas. P. McClellan, Esq..New York
Hector C. McRae, Esq...New York
Marburg Bros., Inc.....New York
Marine Efficiency Co....New York
The Matthews Boat Co..Both
Mechanical Devices Co...New York
Mercury Motor Co.....New York
August Mietz I. F. & Mach. Co. .....New York
Chas. E. Miller, Esq.....New York
Milwaukee Yacht & Boat Co. .....Chicago
Milton Boat Wks.....New York
Monarch Valve Co.....New York
Monitor Boat & Eng. Co. New York
The W. H. Mullins Co...Both
Murray & Tregurtha Co..New York
The Mystic Motor Co....New York
New London Ship & Engine Co.....New York
New York Coil Co.....Both
The N. Y. Yacht, Launch & Eng. Co.....New York
Niagara Motor Boat Co..New York
Niagara Motors & Mfg. Co. .....New York
Noyes Machine Co.....New York
Osborn & Ritchie.....New York
Palmer Bros.....New York
Peerless Marine Motor Co. .....Both
Platt & Washburn Oil Co. New York
Pyrene Mfg. Co.....Both
Red Wing Motor Co.....Chicago
Regal Gasoline Eng. Co..Both
Reliance Motor Boat Co..New York
Rice Bros. Co.....New York
The Rift Climbing Boat Co. .....New York
Scripps Motor Co.....Both
Edward Smith & Co.....New York
The Snow & Petrelli Mfg. Co. .....New York
The Standard Co.....Both
Standard Motor Cons. Co. Both
The Stanley Co.....New York
Stanley & Patterson, Inc..New York
Sterling Engine Co.....Both
Stromberg Motor Devices Co. .....New York
Sumter Electrical Co.....New York
Tebo Yacht Basin Co....New York
The Texas Co.....New York
Thermex Silencer Wks...New York
W. & J. Tiebout.....New York
Toppan Boat Mfg. Co....New York
Tucker & Carter Rope Co. New York
Union Stove Works.....New York
Valentine & Co.....Both
Valley Boat & Eng. Co...Both
Van Blerck Motor Co....Both
Verrier-Eddy Co. .....New York
The Water Craft Co.....New York
Weckler Boat Co.....Chicago
Wheeler & Schebler.....Both
Morris M. Whitaker.....Chicago
Wilcox, Crittenden & Co. New York
Wilmarth & Morman....Chicago
E. J. Willis Co.....New York
Winton Gas Eng. & Mfg. Co. .....Both
Wolverine Motor Wks. .....New York
C. A. Woolsey Paint & Color Co.....Both

The 1914 Motor Boat Shows.

Description of the Various Exhibits Seen in New York, Jan. 31st to Feb. 7th, and at Chicago, Feb. 28th to March 7th. A Comprehensive Exhibition of Engines, Boats and Accessories.

The Elco Company, of Bayonne, N. J., have a comprehensive exhibit at the New York Show, located in the same position in the Garden as heretofore, near the entrance to the building, and at the Chicago Show as well. One of their most interesting exhibits is their



A commodious 50-ft. cruiser, built by the Matthews Boat Co., of Port Clinton, Ohio.

26-foot Elco runabout, here shown for the first time. This is an inexpensive high-grade runabout with a guaranteed speed of 22 m.p.h. With a V design of hull, the engine is located forward with seating space aft. The motor installed is a 40 h.p., 4-cylinder Elco. Another new design is a 30-foot Express, equipped with a 50 h.p. Elco motor, and also having a speed of 20 miles. A new 36-foot Elco Express to replace their 35-footer is shown, and their well known 45-foot Elco stock cruiser is also to be seen. This boat, powered with a Standard engine, has always been a very popular model. A full line of Elco marine engines, to which a 50 h.p., 4-cylinder machine is the latest addition, is on display, and the presence of a Nlseco Diesel engine built by the New London Ship and Engine Company, of Groton, Conn., and identical with the engine installed in Idealia, the first Diesel yacht in America, makes the exhibit the most complete the Elco Company has ever had.

The Matthews Boat Company, of Port Clinton, Ohio, are exhibiting two representative models at the New York Show, and one at Chicago. The two at New York are a 50' cruiser and a high-grade 17' yacht tender. The general idea of the 50-footer is to produce a wholesome cruising type without any attempt at high speed, but embodying in the design all features that tend toward sound and substantial construction, and with it, a beautiful finish. The tender, also at the New York Show, is 17' in length with a beam of 4' 8", and is to be used on a 100' high-speed cruiser now building at this company's plant. The boat is beautifully finished in Spanish cedar, and is equipped with a 10 h.p. Sterling Kid motor, located under a hood, with all controls brought to the steering-wheel location. Seats are for six persons.

The Toppan Boat Manufacturing Company, Boston, Mass., are exhibiting at New York three of their boats, which they believe will attract a good deal of attention. One of these, their new Special Government Model dory they consider the best boat of its kind they have ever put out, as there are embodied in it the improvements of several years. Another model on exhibition is a 22-foot, smooth-planked dory with 6-foot beam, equipped with a 6 h.p. Gray motor enclosed aft. This boat, which is considered a good, reliable craft in rough water, is also being made in many other sizes, both larger and smaller than the 22-footer. Their 16-foot Toppan Sportsman, which sells for $150, is another model which they are pushing. This boat has a speed of 7 miles per hour, and it is high and wide, and especially adapted for family use. At the Show this concern will distribute literature about their many models which will be of interest to all.

The Luders Marine Construction Company, Stamford, Conn., are exhibiting at the New York Show a 51-foot day cruiser of the Kathmar I type that they brought out a couple of years ago, and have since been elaborating on with considerable success. This boat is 9 feet wide and has a draft of approximately three feet, with a speed of 14 or 15 miles obtained from her 60 h.p. Sterling engine. Forward, the boat is of the raised-deck type, the machinery being housed under this deck. Immediately following is a

50-ft. day cruiser, special feature of the Luders Marine Construction Co.'s exhibit.

sunken cockpit left clear for easy chairs, and aft is the main cabin, having extension sofas, mahogany table, etc., while the remainder of the boat is taken up by an after cockpit. The engine is controlled from the central cockpit, and the after cockpit, protected by the after house as it is, makes an excellent retreat to repair to on a windy day.

The American Launch Company, Bayonne, N. J., have on exhibit at the New York Show, their 22½-foot auto express, which is equipped with a four-cylinder, 3¾" x 5½", four-cycle motor developing 30 h.p. at 1,000 r.p.m. The auxiliary equipment includes a Baldridge reverse gear, Bosch high-tension magneto, rear starter, Kenyon auto top, electric searchlight, running lights, etc., and Atlas electric horn. The boat is planked in cedar, copper-riveted over burrs, and the finish is in mahogany. Seats and backs are very handsomely upholstered in Spanish moroccoline leather to match the mahogany finish. The outfit, exclusive of cushions and top, sells for $975, and the top is $30 extra and the cushions $20 extra.

The Milton Boat Works, of Rye, N. Y., are showing at New York, two of their representative boats, in a 22½' runabout and a 12' dinghy. The latter is fitted with a 2 h.p. Waterman engine, and the runabout is powered with a 2-cylinder, 11 h.p. Ferro engine with reverse gear and rear starter, the power plant being designed to give the boat a speed of 13 miles an hour. A 20-gallon gasoline tank of heavy copper is located under the helmsman's seat, and all fittings are for salt water service. Both of these boats are built in the best possible manner of first-class materials, and they are high grade in every respect. As practically all of the work of this concern is to special order they have on exhibition blueprints showing the various types of pleasure craft to show prospective customers.

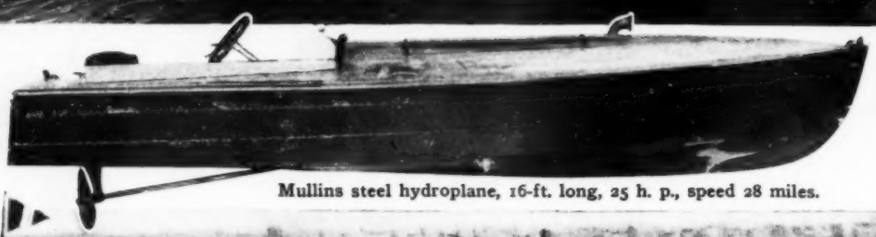
Rice Brothers Company, of East Boothbay, Me., are exhibiting this year at New York a 20-foot Auto-Launch and a 22-foot Auto Family Launch which will be their leaders for 1914. The former of these is a boat on the order of the automobile, steering-wheel and controls being practically the same. The size and general arrangement are ideal for four to six persons, and the style and natty appearance appeal to those who want a boat at their summer homes. The 22-footer is a fast family launch with a beam of 5 feet, in which quality, speed, comfort and seaworthiness are combined. The lines of the boat show a high, flaring bow, and broad and flat midship section running into a comparatively wide V-shaped stern. The work on both these boats is of the best order, and the prices are reasonable.

George Lawley & Son, Corporation, Neponset, Mass., are at the Shows at New York and Chicago with their heavy-duty engines and one or two well chosen models of their boats. Lawley motors are of the heavy-duty type, and are made in three sizes of four-cycle design—two, four and six cylinders, developing 20, 40, and 60 h.p., respectively. This concern builds boats of all kinds, from a ten-foot yacht tender to the largest auxiliary yachts, of wood, steel or composite construction. Lawley work is done under the best possible conditions by experienced workmen and it is all guaranteed.

45-ft. cruiser, built by the Elco Company, Bayonne, N. J., which with a 35 h. p. Standard motor is capable of 11 miles per hour.

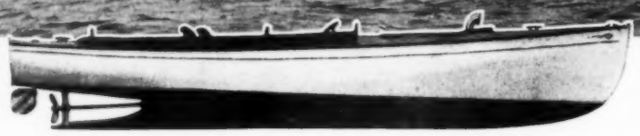
Stock Boats of the Open Type

A neat and fast runabout built by the Niagara Boat Co., of North Tonawanda, N. Y.



Mullins steel hydroplane, 16-ft. long, 25 h. p., speed 28 miles.

20-ft. auto runabout built by Rice Bros. Company, of East Boothbay, Maine.



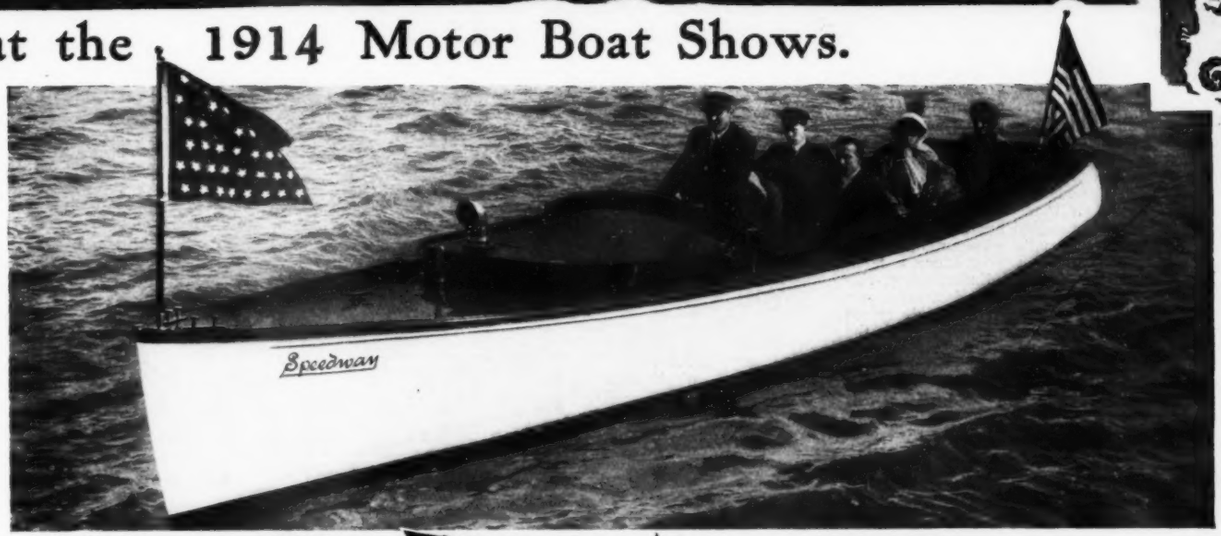
35-ft. Elco express powered with a 60 h.p., 6-cylinder Elco motor, having a speed of 24 miles per hour.

22½-ft. runabout built by the Mil- having a speed of 13 miles per hour, ton Boat Works, of Rye, N. Y.

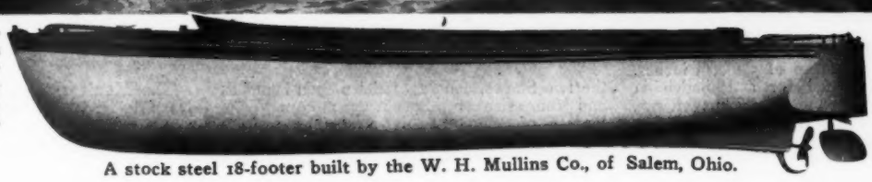
The Sportsman motor dory manufactured by the Toppan Boat Company, of Boston, Mass.—one of their many stock models.

Fast runabout built by the Fay & Bowen Engine Co., of Geneva, N. Y.

at the 1914 Motor Boat Shows.



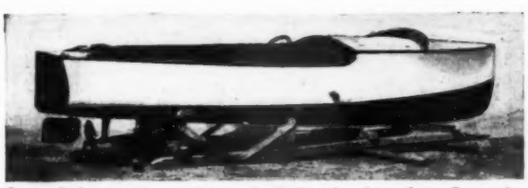
30-ft. Speedway runabout powered with a 24-30 h.p. Speedway motor and having a beam of 6 ft. and a draft of 2 ft. 2 in.



A stock steel 18-footer built by the W. H. Mullins Co., of Salem, Ohio.

A 33-ft. runabout built by the Geo. Lawley & Son Corporation, of Neponset, Mass.

12-ft. Dandy Dink, powered with a two-cylinder Brownie engine, sold by the Water Craft Company.

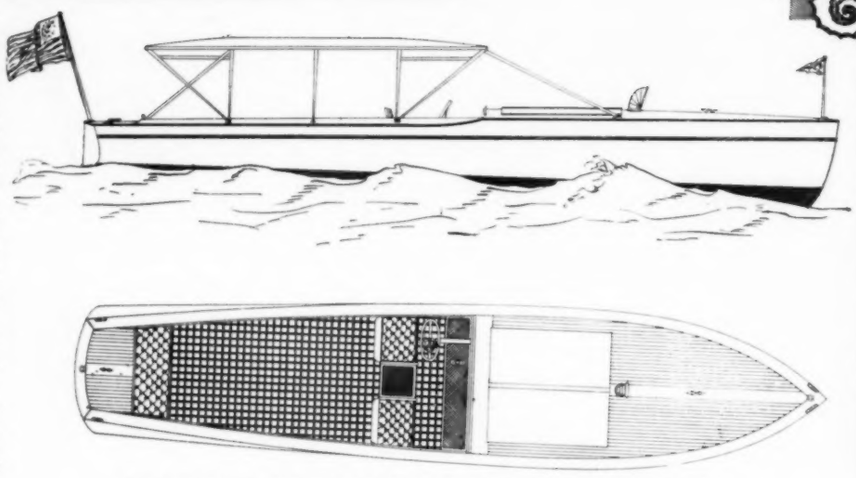


One of the stock runabouts built by the American Launch Company, of Bayonne, N. J.

Stock hydroplane manufactured by the Milwaukee Yacht & Boat Company.

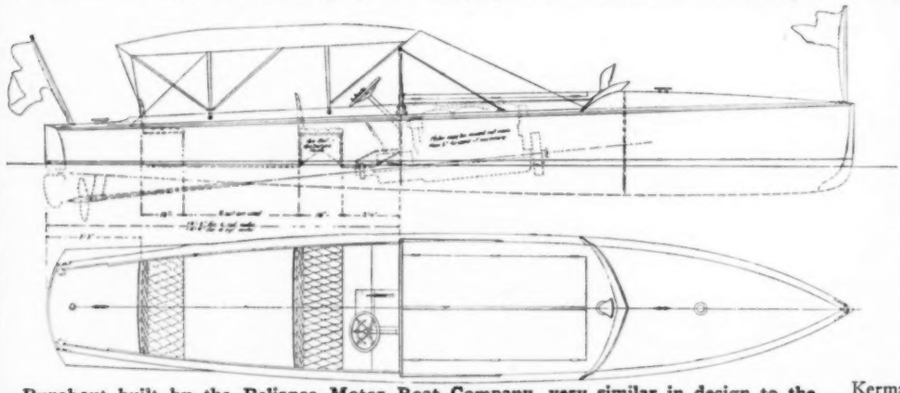
One of the stock lap strake yacht tenders manufactured by the Gas Engine & Power Co. and Chas. L. Seabury & Co.

The Niagara Motor Boat Company, of North Tonawanda, N. Y., exhibit in their space at the Garden two handsome runabouts, the larger being 37 feet in length with 6-foot beam, and the smaller having a length of 28 feet and a beam of 5 feet 6 inches. The larger boat shows a nicely modeled hull with a straight racy sheer line, a sharp-rounded stern, and the after quarters tumbled home. The general construction is unusually substantial, no attempt having been made to produce a light, high-speed model. A six-cylinder, 60-65, Fay & Bowen motor, fitted with electric starter and lighter, is installed under a slightly raised engine compartment about 11 feet from the stem. The smaller boat is very similar to the 37-footer, and, while not so luxuriously appointed, there is a wealth of conveniences aboard her. She is powered with a four-cylinder, 20-35 h.p., Fay & Bowen, 4-cycle motor.



Stock runabout designed and built by the Niagara Motor Boat Co., North Tonawanda, N. Y.

The Reliance Motor Boat Company, of New York, are exhibiting at the Garden this year two boats which they have just completed. One of them, which is shown in the Van Blerck space, and is powered with a Van Blerck, six-cylinder, 5½" x 6", high-speed motor with Bosch double-point ignition, etc., is 29 feet in length with a beam of 5 feet 3 inches. This boat was designed for a Philadelphia yachtsman for use on the Shrewsbury River, and one of the conditions of the sale is that she must show a speed of 33 miles an hour. The entire boat is of selected mahogany, exclusive of the white oak timbers. The boat is complete with U. S. L. 1914 electric starting apparatus, electric searchlight, running lights, Klaxon horn, Reliance windshield, wicker armchairs, etc., and the makers say that she is a work of art in every detail. The other boat exhibited in the Reliance Company's space is an exact duplicate of the famous Cinderella, and is equipped with a 1914 four-cylinder Sterling motor. She is 26 feet by 5 feet 1 inch beam.



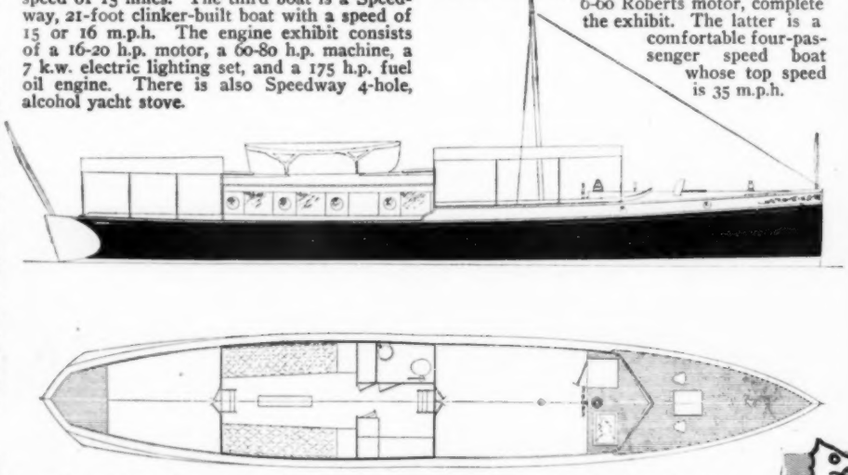
Runabout built by the Reliance Motor Boat Company, very similar in design to the famous Cinderella.

The W. H. Mullins Company, Salem, Ohio, manufacturers of pressed steel boats and standardized wooden boats, are showing at New York and Chicago this year nine models of both types. Of especial interest to the prospective boat buyer is the Mullins line of standardized wooden launches—a line built after designs by Whittlesey & Whittlesey, which are not only pleasing to the eye, but will be found thoroughly staunch and seaworthy. The latest addition to this line is the Mullins-Arrow, a 25-footer with 5-foot beam, drawing 6 inches, which has a seating capacity of from eight to ten persons. This boat is of carvel construction with vertical and horizontal battens back of all seams. There is a choice of motor installation, either a 35 h.p. Sterling or a 15 h.p. Ferro being fitted as regular equipment. Of the eight other boats shown, one is their 26-foot steel boat, another is their 16-foot steel hydroplane, and a third is their 18-foot Steel Leader launch.

The exhibits of the **Gas Engine and Power Company and Charles L. Seabury & Company, Cons.,** Morris Heights, New York City, at the two Shows, consist of three open launches and four sizes of Speedway motors. The largest of the boats is a 50-foot mahogany, seagoing runabout. The intention of the company was to construct as seaworthy a boat as possible for her size, style and speed. She is planked and finished in bright mahogany, and is powered with a six-cylinder, 6" x 6" Speedway, 60-80 h.p. motor, giving her a speed of 15 m.p.h. The next boat is one of their stock, 30-foot Speedway runabouts, having beam and draft of 6 feet and 2 feet 2 inches. Powered with a 4-cylinder, 4½" x 5". 24-30 h.p., Speedway motor, she also has a speed of 15 miles. The third boat is a Speedway, 21-foot clinker-built boat with a speed of 15 or 16 m.p.h. The engine exhibit consists of a 16-20 h.p. motor, a 60-80 h.p. machine, a 7 k.w. electric lighting set, and a 175 h.p. fuel oil engine. There is also Speedway 4-hole, alcohol yacht stove.

The Monitor Boat and Engine Company, Newark, N. J., have on exhibition at the Garden 24 models of various types and styles of open and cabin boats, ranging from the small family boat to the 50-foot bridge deck cruiser, and, in addition to this, four sizes of Monitor engines, namely, one each of their single-cylinder medium and heavy-duty, and one each of their two-cylinder medium and heavy-duty motors. They are also showing, as an attachment to the single-cylinder engines, the Gere Reverse Mechanism which is said to positively reverse the engine. It is claimed for this feature, which is being fully demonstrated, that it solves the problem of reversing the single-cylinder engine without the use of reverse propeller wheel or reverse clutch mechanism, as it is designed to replace both.

The Valley Boat and Engine Company, Saginaw, Mich., are exhibiting four of their "Faultless" boats at the two Shows. One of these, a 19-foot runabout, is equipped with a 12 h.p. Kermath motor, and a speed of 16 miles an hour is claimed for it. It is finished in white cedar with mahogany trimming, and it has the neat appearance which can only be obtained by the use of the best materials and workmanship. The 16-foot Valley hydroplane, which proved herself to be a fast and steady little boat last season, is also on view, powered, as usual, with a 4-cylinder, 40 h.p., Roberts motor which drives her at over 30 m.p.h. A V-bottom runabout, 22 feet in length by 4 feet 6 inches beam, powered with a 10 h.p. Fulton engine and a 19-foot special hydroplane with a 6-60 Roberts motor, complete the exhibit. The latter is a comfortable four-passenger speed boat whose top speed is 35 m.p.h.



50-ft. cruiser of exceptional features being exhibited by the Luders Marine Construction Company, of Stamford, Conn.

The Marine Motors Exhibit.

W. R. Haynie, New York, is displaying a single-cylinder, direct reversible Bolinder engine at the New York Show. This is an engine developing net 15 b.h.p. at 450 r.p.m., with a fuel consumption of .6 lbs. of crude or fuel oil per b.h.p., delivered. At the Show it is fitted with stern tube, shaft and propeller complete. These Bolinder engines are built in sizes from 5 to 180 h.p. in single cylinders; from 10 to 160 h.p. in twin cylinders, and from 60 to 320 h.p. in four cylinders. There are a number of photographic views of the different engines and installations, and an ample supply of literature describing the Bolinder marine oil engine. There are over 6,000 Bolinder marine engines in use to-day.

The New York Yacht, Launch and Engine Company, Morris Heights, New York, are exhibiting this year their 30-40 h.p., 6½" x 8½", 4-cylinder Twentieth Century motor. This motor, like all the others in this line, is of substantial construction with Twentieth Century reverse gear contained in a cast iron drum, fitted to the base of the engine casting and held rigidly in line. A special grade of high carbon, steel-hammered forging is used for the crankshaft and connecting rods. Cams, rollers and wrist pins are made of hardened and ground steel, while the crank bearings are of phosphor bronze; the main bearings are of the best babbitt metal or bronze as desired, and all are adjustable for wear. The carbureter used is also of Twentieth Century make, and is adjusted by an index needle, which, when set, requires no further attention. This company makes a specialty of building large right and left-hand engines for twin-screw boats.

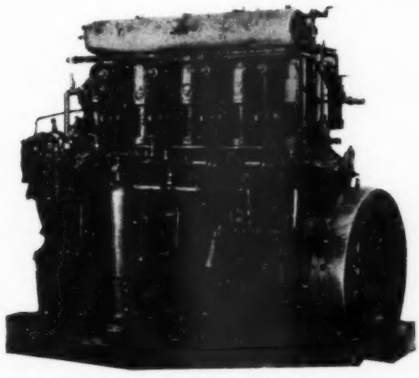
The Fulton Manufacturing Company, Erie, Pa., are exhibiting at the New York and Chicago Shows Fulton engines in five types. The first of these is the Fulton Self-Sparking, two-cycle, medium-duty engine, which is built in six sizes, all of which are equipped with their self-sparking ignition system which entirely eliminates all coils, batteries, timers, vibrators, etc. This type of ignition has been used for four years and found by the company the most satisfactory for two-cycle engines. Several sizes of the Fulton Special, which is a lighter weight jump-spark engine, suitable in semi-speed boats and runabouts, as well as the average type launch, are being shown. Several sizes of their four-cycle, heavy engines are exhibited, and the Fulton Flyer in several sizes is also shown. They also have three Fulton Diesel engines for the first time.

Fairbanks, Morse & Co., New York, are exhibiting a number of marine engines at the Garden, of which the most interesting, perhaps, is their new 45 h.p., hot bulb or semi-Diesel engine. This engine, which is designed to operate on low-grade fuel, is built in one, two, and three cylinders of 15, 30 and 45 h.p., respectively. The cylinder dimensions are 8" x 10", the whole machine being of very heavy design, especially adapted for work boats, and also for people who desire economy in cost and consumption of fuel. The company state that they have had one of these engines in constant operation for the last ten months, and that it has performed to the satisfaction of every one concerned. Of the other models shown, one is Type E, built in single and double cylinders with 3½ and 7 h.p., and another is Type K, also in one and two cylinders of 7½ and 15 h.p.

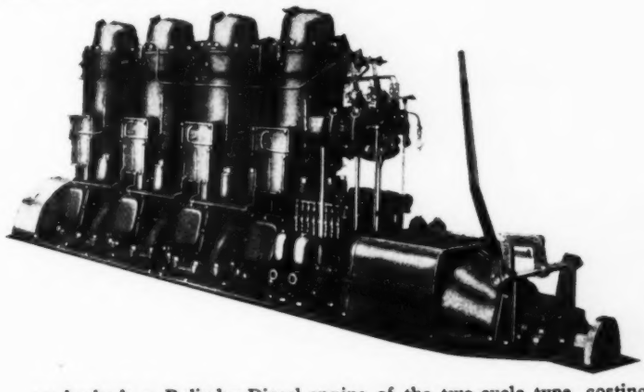
The James Craig Engine and Machine Works, Jersey City, N. J., are showing at both New York and Chicago a representative display of their line of marine engines. These engines are all of the four-cycle type and embrace a field which covers nearly every kind of heavy-duty service. The smallest of these is an 18 h.p., 3-cylinder engine with cylinder dimensions of 6" x 7", and this type is also made in four cylinders. The largest is a 300 h.p., six-cylinder motor with bore and stroke of 11" x 12" which weighs 10,000 lbs., and turns over at 400 r.p.m. In addition to their regular line, they are also showing a new motor of the Diesel type.

The New London Ship & Engine Company, Groton, Conn., are exhibiting at the New York Show one of their 150-180 h.p., six-cylinder, low-speed, single-acting, two-cycle Nlseco Diesel engines. This is the second engine of its type to be built in America. The first one was a four-cylinder model of the same general characteristics. This six-cylinder engine of the four-cycle type runs normally at 350 r.p.m., being slow enough to obtain results with the most efficient propeller on commercial vessels, coasting schooners, fishing craft, tugs, and passenger ships, but it can be speeded up to 400 r.p.m. with a proportional increase in power, if desired. The cylinders are 9" in diameter and have a stroke of 12½". For larger types of engines this company makes them directly reversible, but for an engine of this size where a suitable reverse gear is obtainable, they consider the reverse feature unnecessary.

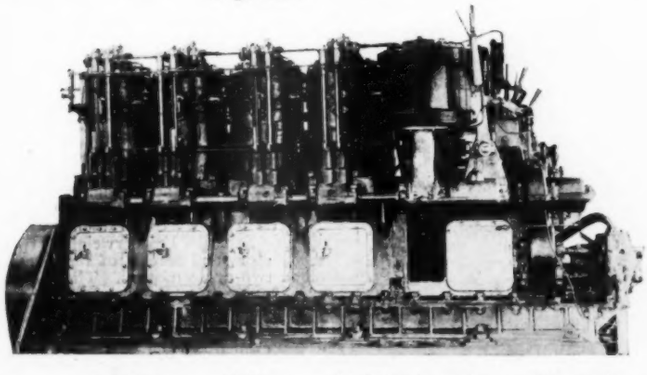
Diesel Motors Exhibited for First Time.



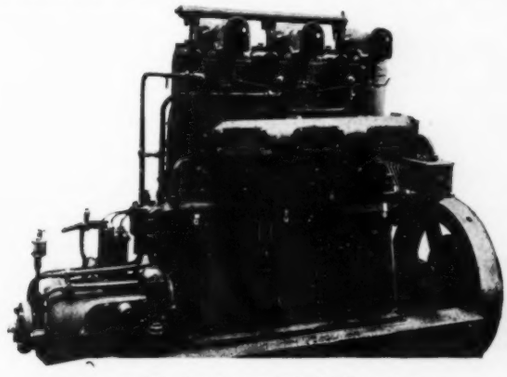
45 h. p. 3-cylinder hot bulb semi-Diesel engine, manufactured by Fairbanks-Morse & Co., and having a bore of 8" and a stroke of 10". This motor is especially adapted for work boats, where operating cost and fuel economy is important.



320 brake h. p. Bolinder Diesel engine of the two-cycle type, costing about fifty dollars per h. p. installed. This motor is direct reversible, operates at 225 r. p. m. and weighs approximately 49,600 lbs.

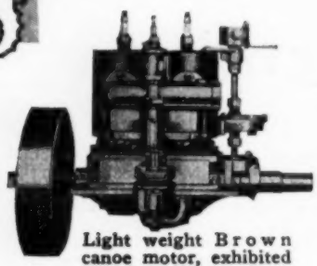


Speedway 4-cylinder, 2-cycle Diesel engine, self-reversing with single scavenging cylinder driven from a separate crank on the after end of the motor. The cylinders are 9" bore, 12" stroke and are fitted with loose heads.

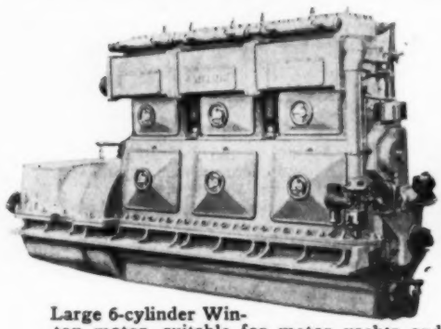


150 h. p., 4-cylinder, low speed, single acting, non-reversible, Nlseco Diesel engine, very similar to the 6-cylinder Diesel engine exhibited by the New London Ship and Engine Co.

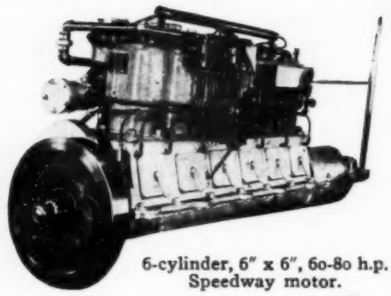
The Motor Boat Shows



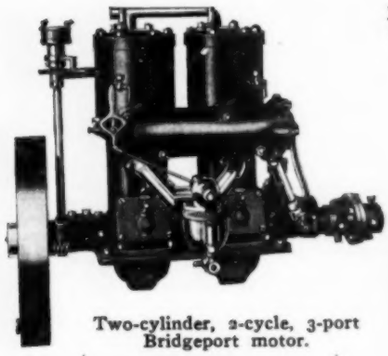
Light weight Brown canoe motor, exhibited by the Water Craft Company.



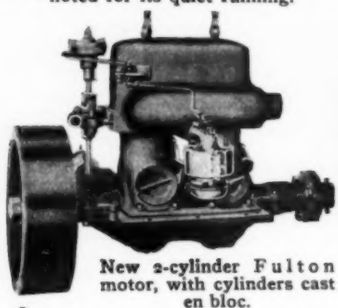
Large 6-cylinder Winton motor, suitable for motor yachts and noted for its quiet running.



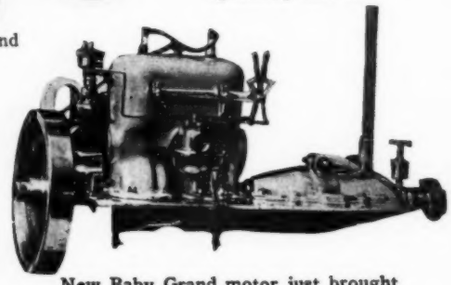
6-cylinder, 6" x 6", 60-80 h.p. Speedway motor.



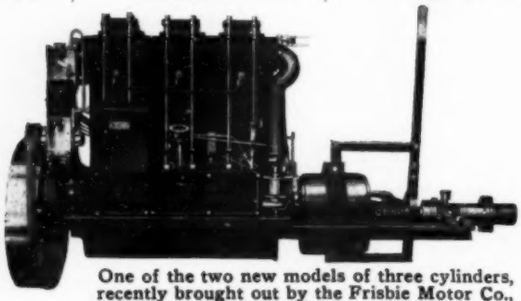
Two-cylinder, 2-cycle, 3-port Bridgeport motor.



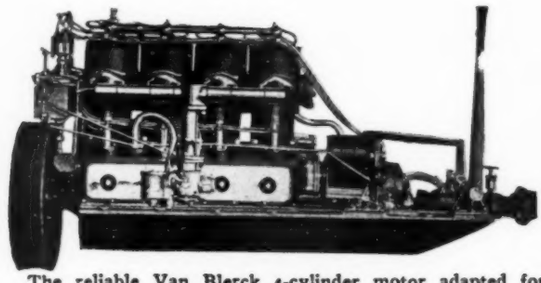
New 2-cylinder Fulton motor, with cylinders cast en bloc.



New Baby Grand motor just brought out by the Gray Motor Co., of Detroit, Mich.



One of the two new models of three cylinders, recently brought out by the Frisbie Motor Co., of Middletown, Conn. The smaller is 4¾" x 5" and the larger, 6" x 6".



The reliable Van Blerck 4-cylinder motor adapted for both cruiser and speed work.

The Winton Gas Engine and Manufacturing Company, Cleveland, Ohio, have on exhibition at the Shows this year three six-cylinder engines as follows: One 125 h.p. machine with cylinder dimensions of 8" x 11"; one 5 k.w. generating set with bore and stroke of 3" x 4"; and a 7 h.p. 2¼" x 3" tender engine, installed in a mahogany yacht tender, 18 feet long, built by the George Lawley & Son Corp., Neponset, Mass. These machines, which are all painted in white enamel, the standard finish of this company, represent the quality of marine engines they are now building. This concern expects to do a big business this year, and it states that nearly all the large motor yachts built in the east during the last year were powered with Winton engines.

The Gray Motor Company, Detroit, Mich., are exhibiting at both Shows practically a complete line of their motors, including two new motors which have just been brought out. Of these, the most important is their new four-cycle machine made in two models—a four and a six. The cylinder dimensions are 4⅛" bore by 5¼" stroke, and the four-cylinder machine develops a good 20 h.p. at 700 r.p.m., and a little over 30 h.p. at 1,000 r.p.m. The six-cylinder model develops 35 to 50 h.p. The motor is made a unit power plant, and the base of engine and clutch cover are made of aluminum. The oil pan is made of iron to add strength and rigidity; the bearings are large and the wearing surfaces ample. The other innovation is the Gray Baby Grand, a two-cylinder, 6 h.p., Gray unit power plant for yacht tender service. The regular line of two-cycle motors manufactured by the Gray Motor Company, which is so well known by all users of marine motors, is attractively displayed. There is a Gray motor for every requirement.

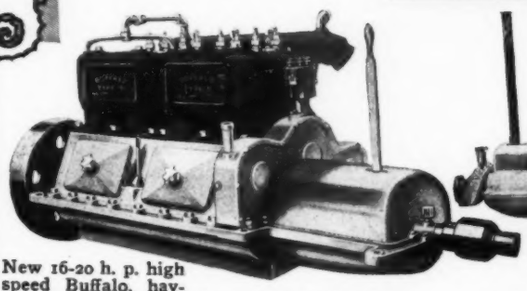
The Van Blerck Motor Company, of Monroe, Mich., have the same stand at the Garden that they have had in previous years, directly opposite the main entrance. Here, as well as at Chicago, a representative line of engines is exhibited, including a two-cylinder, medium-duty 5" x 6" motor, designated as Model B-2. The B-4 Special, also exhibited, is a beautiful illustration of a compromise, medium-high-speed type of motor. This engine is fitted with aluminum crankcase and high-speed oiling device which makes it especially suitable for fast runabouts, ranging in size from 20 to 35 feet. The Van Blerck high-speed engines are represented in two models—the C-4 and C-6, the latter being fitted with complete Northeast electric starter. These models have 5½" bore by 6" stroke, and are rated at 1,200 r.p.m. They are especially suitable for fast runabouts and speed boats. The eight-cylinder racing motor known as C-8, and also shown, is claimed by the makers to develop 230 h.p. at 1,750 r.p.m.

The Bridgeport Motor Company., Inc., Bridgeport, Conn., are showing at New York, a complete line of their gasoline and kerosene motors. Models R, R-2, S, and S-2, being 8 and 16 h.p., and 11 and 22 h.p. of the single and double-cylinder types are heavy-duty speed models for gasoline, and an addition to the regular line for 1914. These models have been designed especially for installation in the Jersey fishing skiffs or surf boats and similar craft of easy-driving qualities. They will also be suitable for pleasure boats. In addition to these motors, they are also exhibiting one of the famous Jersey fishing boats as used in countless numbers by the fishermen along the Atlantic Coast, and in which the Bridgeport motor has been so deservedly popular.

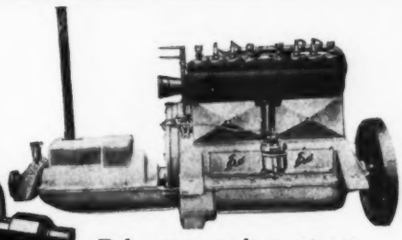
The Frisbie Motor Company, Middletown, Conn., are displaying at the New York Show a single-cylinder, 3-5 h.p. motor and two double-cylinder motors of 6-10 and 10-14 h.p., one of which is equipped with kerosene burning manifold and also with a lobster hoist which will be of special interest to fishermen and those engaged in similar pursuits. There are also shown two of their new engines which are now being brought on the market. These are three-cylinder motors, one having bore and stroke of 4¾" x 5" and the other 6" x 6". These motors embody some very interesting features. The cylinders are cast en bloc with the manifolds an integral part of the casting. Lubrication is so arranged that such small parts as rocker arms, push rod tops, mushroom guides, etc., can go a long time without attention. Other motors are also shown, but these new models are the features of the exhibit.

The Erd Motor Company, of Saginaw, Mich., are exhibiting at New York and Chicago two of their new 25 h.p., four-cylinder, four-cycle, en bloc motors—a high speed type (aluminum) suitable for fast speed runabouts and fast family boats, and a Standard type (iron) suitable for small cruisers and work boats. They also show one of their 30 h.p., three-cylinder Special Featherweight, two-cycle speed motors and several of their regular standard two-cycle motors. **The Valley Boat and Engine Company,** of Saginaw, Mich., are exhibiting a 19 foot runabout powered with one of the new Erd 25-h.p. motors. This runabout, which is cedar built and mahogany trimmed, is fitted with reverse gear and rear starter, and is patterned after the new wave collecting type. Its speed of 20 m.p.h. is better than has been obtained in any other boat with the same engine.

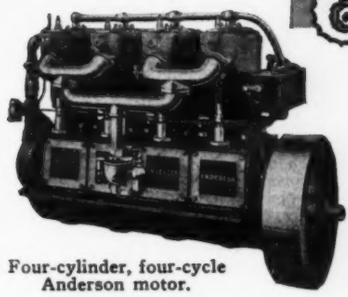
The Motor Boat Shows



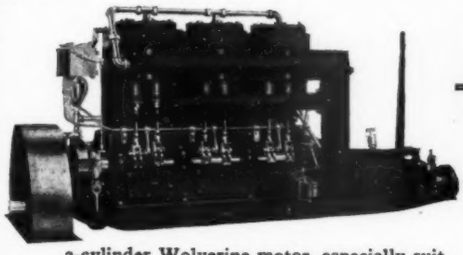
New 16-20 h. p. high speed Buffalo, having four cylinders 3¾" x 5", developing its power at 800 r. p. m. and weighing but 550 lbs.



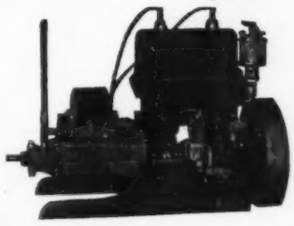
Erd motor, 25 h. p. at 900 r. p. m.



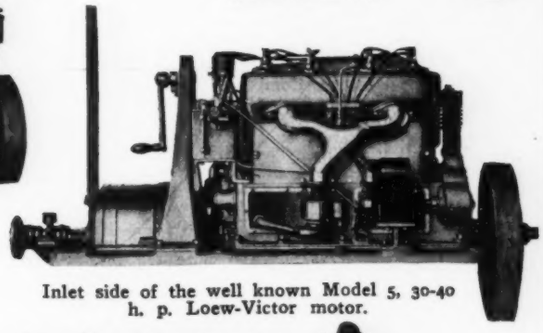
Four-cylinder, four-cycle Anderson motor.



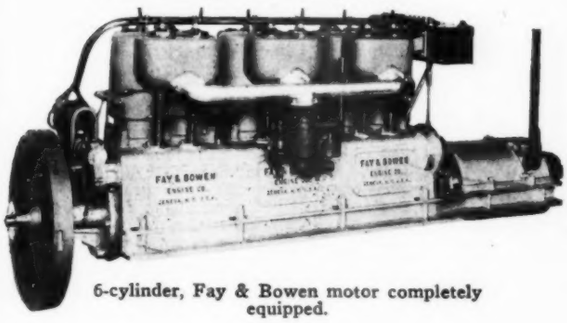
3-cylinder Wolverine motor, especially suitable for cruiser and heavy work.



Carlyle-Johnson's Bud-E motor weighing only 110 lbs.



Inlet side of the well known Model 5, 30-40 h. p. Loew-Victor motor.



6-cylinder, Fay & Bowen motor completely equipped.

Well known 6-cylinder Twentieth Century motor.

The Buffalo Gasoline Motor Company, Buffalo, N. Y., are exhibiting at the two big Shows eight models of their line of marine engines, of which the 85-100 h.p., heavy-duty, four-cylinder, 10" x 12" motor, and the 16-20 h.p., high-speed machine are the leaders. The latter is their new model, and it is a modern engine in every respect. All valves, gears, and, in fact, all working parts, are enclosed, though easily accessible by means of large panels. It is equipped with aluminum base which contains the crankshaft bearing, and which is of the regular Buffalo solid extension type. The cylinders are of the L-type, cast in pairs, and the pistons are of gray iron, four rings to each piston, all located above the piston pin. Lubrication is by constant level splash, and the cooling system presents some good features, the water entering the cylinders directly below the valves and leaving them at the top of the opposite side.

The Wolverine Motor Works, Inc., Bridgeport, Conn., are exhibiting at New York, a 36 h.p. engine, fitted up to use suction producer gas, and they also have on display a Galusha producer, which is being used successfully in various countries in connection with Wolverine engines. The first advantage claimed for the use of this fuel is economy. Gas producer coal at $5 a ton, the company points out, is as cheap as oil at 2 cents a gallon, and while 100 h.p. can be procured for 10 hours from $2.50 worth of coal, under the same conditions liquid fuel at 10 cents per gallon will amount to $12.50, and gasoline at 16 cents to $20. All Wolverine motors are fitted to use kerosene and some of the lower and cheaper grades of oil for fuel, so the features of their exhibit will be their kerosene engine and suction producer gas engine, which are practically the same machine with a few minor changes when producer gas is to be used.

The Anderson Engine Company, Chicago, Ill., are showing this year at both Shows, four of their models, consisting of a 24 h.p., four-cylinder machine with bore and stroke dimensions of 5" x 6", and three two-cylinder engines in 12, 8 and 5 h.p., with cylinder dimensions respectively, 5" x 6", 4½" x 5" and 4" x 4". The cylinders of these motors are made of a special mixture of close-grained iron and cast with solid heads so as to require no gaskets. Much care is given to their special reaming and machining. The pistons are made of the same material, light in weight but strong, and carefully ground and fitted. The rings are turned eccentric from special casting, split-step fashion, ground and fitted. The crank-case is of special casting, well designed and as light as is consistent with the strain it must withstand. Baldridge reverse gears are fitted on the 5 and 8 h.p. engines, and Paragon gears on the larger sizes.

The Carlyle-Johnson Machine Company, Manchester, Conn., are showing at both Shows their Bud-E marine motor, No. 1 Model E marine reverse gear of their new ball bearing design put on the market this season. The Bud-E motor, which is well known to motor boatmen, is a 5 h.p., unit power plant for use on light tenders, canoes and light speed boats. It is a two-cylinder, 2-cycle, 3-port motor with the cylinders cast en bloc, and is extremely compact, being only 25 inches over all in length. It is said to be the smallest unit power plant manufactured. The Model E reverse gear is a vanadium steel gear which is entirely encased so that no foreign matter can get into the bearings, and yet it is easily accessible for oiling or adjustment by two thumb screws in the upper half of the case.

The Fay & Bowen Engine Company, Geneva, N. Y., are exhibiting at the Garden, in addition to their complete line of type L, four-cycle engines, their 25-foot "Special" family launch, and a de luxe model of their 26-foot runabout. As regularly constructed, this 26-footer, designed by Morris M. Whitaker, has framing timbers of the best white oak, copper or bronze fastened, with southern white cedar planking and plank-sheer, sheer-strake, rub-strake, decks and entire interior finish of mahogany, but the show model has planking entirely of mahogany. Instead of the usual hand crank for starting the engine, this Show boat carries an electric starter and the boat is fitted with electric lights. The 25-foot "Special" is shown in regular construction equipped with this company's 4-cylinder, 10 h.p., four-cycle motor which gives it a speed of 14 miles an hour. Although this year's leaders for this company are their type L, four-cycle engines, they are also exhibiting one of their old reliable 10 h.p., two-cylinder, two-cycle engines complete with reverse gear.

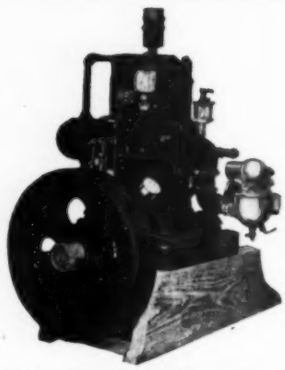
The Loew-Victor Engine Company, Chicago, Ill., are exhibiting at the Shows in New York and Chicago one each of ten models of marine engines, ranging from their Model 10, 6 h.p., one-cylinder engine to their Model 10, six-cylinder, 130 h.p. machine, adaptable to cruisers and work boats over 45 feet in length. The latter is especially recommended by the company for high-speed commercial boats or cruisers where high power is necessary, together with moderate weight. Of the other eight engines shown, one is of the two-cylinder type, one three-cylinder, four four-cylinder, and two six-cylinder. These engines comprise a line of engines suitable for practically all pleasure and work boats. The four and six-cylinder machines can be fitted with the Leece-Neville lighting and starting system, which has proved itself on these engines to be thoroughly dependable and trouble-proof, at an additional cost of $250. This company is also showing a Hand V-bottom boat.

The Motor Boat Shows

The S. M. Jones Company, Toledo, Ohio, are exhibiting at the Shows the newest addition to their line of Ralaco engines, as well as some of their older models. The new motor is a six-cylinder affair rated at 40 h.p., with cylinder dimensions of 5" x 7", and it embodies all the essential features of Ralaco design, being identical with their four-cylinder engine with the same cylinder dimensions. This engine, however, is equipped with a self-starting outfit and separate bilge and circulating pumps, and the makers believe that it will meet the demand for engines of a trifle above medium weight, and will not be too heavy for boats from 45 to 60 feet that are now demanding an engine of about this power. The other models shown are a two-cylinder engine with 8-10 h.p., a four with 15-20 h.p., and a six with 75-80 h.p.

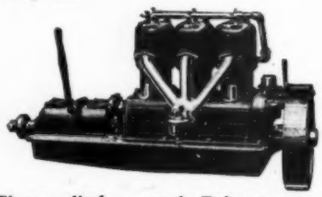
The Scripps Motor Company, Detroit, Mich., are exhibiting at both the New York and Chicago Shows. At New York they are displaying eight different models representative of their entire line. These models are their Scripps Midget, one of their extreme heavy-duty, four-cylinder models, a two-cylinder, Model L, similar to the motor which drove Detroit to St. Petersburg, Russia; a two-cylinder, Model M, 9-13-h.p., medium-duty; a four-cylinder, Model H, semi-speed motor, equipped with Rushmore electric starter; a four-cylinder, Model K, medium-duty, and a six-cylinder, Model E, semi-speed engine. Their New York representatives, the Bowler, Holmes & Hecker Company, are in charge of this exhibit, and O. L. Cosgrove & Company will represent them in Chicago where they will have a Midget, a Model L, Trans-Atlantic motor, and a four-cylinder, Model H, semi-speed motor.

The exhibits of the **Sterling Engine Company,** Buffalo, N. Y., at both Shows, are of more than usual interest, and will be well worth a visit. In addition to exhibiting their full line of regular models, they are showing, also, their 1914 model, medium-duty and speed engine rated at 20-35 h.p., with a bore and stroke of 4¾" x 5½", with all gears enclosed in one housing at the rear of the engine. The high-speed engines are well represented by a model of their new 45-75 h.p. six and their special 1914 eight. They have also a 17-foot tender-de-luxe equipped with the Kid, but the most interesting of all is the big eight-cylinder mammoth, designed on new principles, built on new principles and filling a new requirement. The cylinder dimensions are 8¼" x 10", and there is not a single moving part in view, nor is there an exposed nut, and the action is said to be perfectly silent.

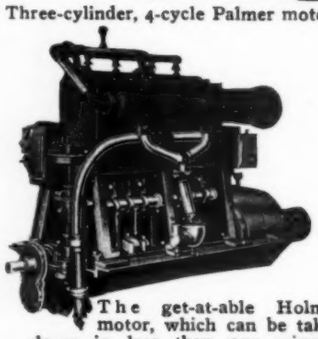


Single-cylinder Monitor motor.

Murray & Tregurtha Company, South Boston, Mass., are exhibiting at the New York Show only their heavy-duty and semi-heavy-duty engines. These engines are the same that they have had on exhibition before, except that they have received numerous little refinements of detail. This company makes it its endeavor to create an engine which is easily get-at-able in every respect, and yet as noiseless as possible.



Three-cylinder, 4-cycle Palmer motor.

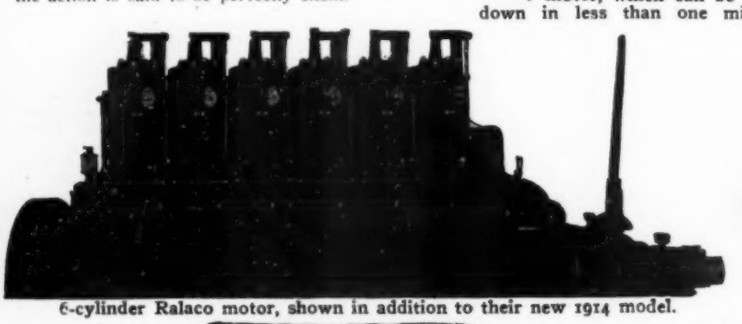


The get-at-able Holmes motor, which can be taken down in less than one minute.

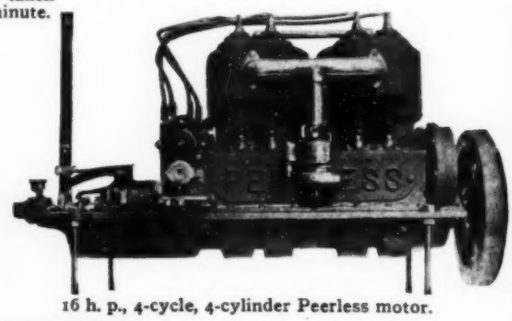
The Holmes Motor Company, of West Mystic, Conn., are showing at New York, one of their well known lifeboat cruisers, and in connection with this, a model of a launching device for putting these boats overboard from ocean liners. They are also showing one of their Model H, six-cylinder engines, and are introducing to the public for the first time their new 25-h.p., gearless, four-cylinder engine. This is a 4-cycle engine with Coventry noiseless chain drives for camshaft, magneto, water pump, etc. It has also an entirely enclosed ball bearing reverse gear of the Carlisle-Johnson latest type, and the engine throughout is of the highest grade construction for strictly first-class service, silent running with flexibility of control being the prominent features of this new gearless de luxe type. This model and the Model H will also be shown at the Chicago Show.

Palmer Bros., Cos Cob, Conn., are exhibiting nearly their complete line at the New York Show this year. Of the 24 models on exhibition, 12 are of the two-cycle type, and 12 four-cycle. Of the latter, types NL and NR are closed-base machines made in 1, 2, 3 and 4 cylinders with multiple disc clutch. Types F and K are similar with the exception that the valve chests are made in separate castings so that they can be removed and replaced in case of trouble without getting new cylinders. These motors are both jump-spark and make-and-break. They are lubricated automatically by means of an oil pump, and there are different supplies of oil for the base and clutch, the clutch running in its own supply of oil, which may be replenished when necessary. These motors may be fitted with friction-driven magneto, or the magneto may be driven by a gear off the camshaft.

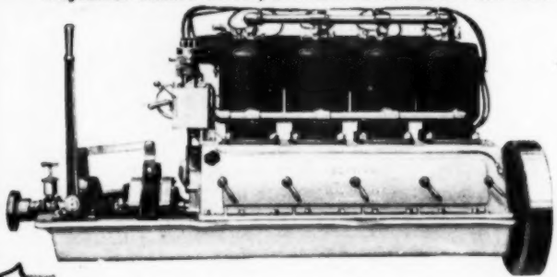
The Peerless Marine Motor Company, Buffalo, N. Y., are exhibiting at New York and Chicago the following models: Four-cylinder, 25-35 h.p. motor with cylinder dimensions of 5" x 6", with Joe's gear and electric starter and lighting plant; four-cylinder, 16-20 h.p., with cylinder dimensions of 4" x 6", equipped with Joe's gear; a two-cylinder machine of the same dimensions and half the power, also equipped with Joe's gear, and a two-cylinder, 12-16 h.p., bore and stroke, 5" x 6", with the same reverse equipment. The company have added a new engine in two sizes, making it now possible to secure a Peerless engine in a wide range of service. All wearing parts of this new model are extremely wide and heavy, and yet all useless metal has been cut away so that the engines are really very light. The cylinders are of the T-head type and cast in pairs, having large valves.



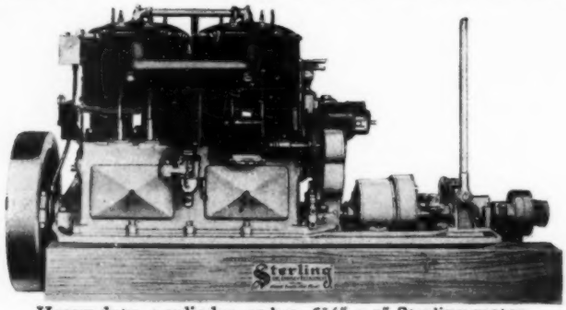
6-cylinder Ralaco motor, shown in addition to their new 1914 model.



16 h. p., 4-cycle, 4-cylinder Peerless motor.



4-cylinder Scripps motor. One of their complete line of 17 models.

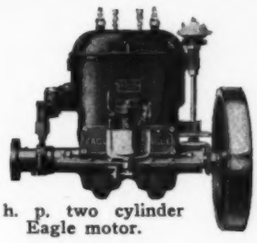


Heavy duty, 4-cylinder, 45 h.p., 6½" x 9" Sterling motor.

The Standard Motor Construction Company, Jersey City, N. J., are exhibiting this year at both Shows, 7 marine motors ranging in size from 10 h.p. to 150 h.p., and including two high-speed auto marine models, one generator outfit, and a Lundin type, Standard equipped lifeboat. This lifeboat will undoubtedly attract a good deal of attention, as it has a number of unusual features. Thirty-six feet in length, it is decked over fore and aft, is self-bailing, and is fitted with a wireless outfit, and enclosed wireless house. The propeller revolves in a tunnel stern and the bottom is absolutely flat. To aid in steering in a rough sea, a double fin is placed in the forward part of the tunnel. The fin is positively controlled by a gear and screw arrangement, and is designed to make the least resistance in the water, and, at the same time, withstand a heavy side pressure.

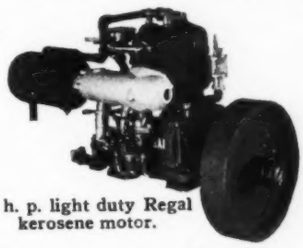
The Regal Gasoline Engine Company, of Coldwater, Mich., are showing at both New York and Chicago a line of light and heavy-duty kerosene engines and their 32 h.p. auto marine engine. The kerosene engines, which form a large part of the company's export trade, and are becoming also a factor in their domestic trade, deliver power per gallon of kerosene equal to that derived from an equal amount of gasoline, it is claimed. The 32 h.p. is the light, high-speed model which this company has manufactured for some time, but there have been some important changes in its construction. The oiling system now employed is a combination of force-feed and splash, allowing the motor to be placed at any reasonable angle without danger of injury from deficient oiling. The muffler and exhaust pipe are water-cooled, and one of the claims made for this engine is that you can place your hand on any portion of it without discomfort.

The Standard Company, of Torrington, Conn., are displaying at the two Shows, in all, 16 models of their comprehensive line of ma-



7 h. p. two cylinder Eagle motor.

rine engines. The leader of these, perhaps, is Model 2-O, the 1914 addition to their line, which has exceeded their highest expectations in tests both at the factory and in open sea work. Models O, 2-O and 2-K are fitted with Sumter J. S. magnetos, while their Model R is fitted with a Sumter M. & B. magneto. These magnetos are all attached to the engine with brackets, are gear-driven at engine speed, and the notable feature about them is that batteries for starting are unnecessary, as the engine can be started from the standstill on the magneto. While these engines are designed to operate on gasoline, the company is prepared to supply a kerosene outfit which has proven very satisfactory. Paragon gears are attached to several engines.

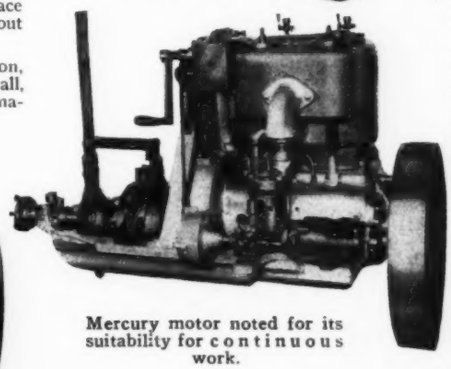


3 h. p. light duty Regal kerosene motor.

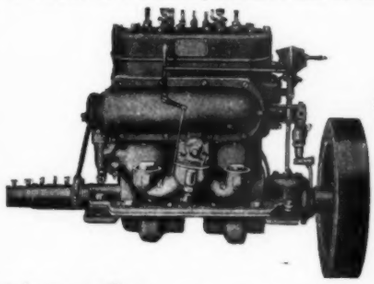
The Stanley Company, Salem Mass., are exhibiting at the New York Show a full line of their motors from 3 to 15 h.p. inclusive, both make-and-break and jump-spark in single and double cylinders. These motors, which are all of the two-cycle type, are sold with or without full equipment, but a saving in price is effected by ordering full equipment to accompany the engine. This equipment consists of salt water propeller outfit, including bronze propeller, Tobin bronze shaft, stuffing box lag screws and nuts, battery outfit, and pipe and fittings for gasoline. As an extra, a Stanley reverse gear is provided, built into the motor. All these motors have had some minor changes for 1914 which will not only tend to improve the running qualities, but also the wearing qualities.

The Lamb Engine Company, Clinton, Ia., are showing at New York and Chicago, in addition to a cruiser with one of their new four-cylinder, medium heavy-duty engines installed, a complete line of this type of engine in two, four and six cylinders. The four and six are new models this season. There has been such a demand for this type of motor in larger sizes than the 15 h.p. two, that the Lamb people have extended their line to a four and six in the same bore and stroke. They are also showing a four-cylinder, medium-duty motor, 5¼" x 6" cylinders, 24 h.p., of the same type of engine that they have had on the market for several years. The list of their models at the Show is completed with the mention of a four and a six-cylinder, heavy-duty motor with cylinder dimensions of 6⅝" x 7", and a new high-speed model in four cylinders with electric starter.

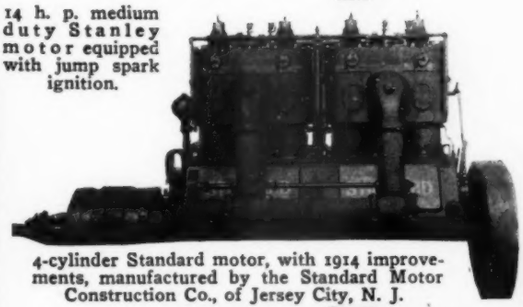
The Kermath Manufacturing Company, Detroit, Mich., have, at New York, one of their 12 h.p. Kermath motors sectioned out so as to show all the working parts. This is set on a four-post stand five feet high, so that it may be readily inspected; it will be electrically operated. Something new in their line is a 2-cylinder, special four-cycle yacht tender motor of 5 to 6 h.p., 3½" x 4". The cylinders are finished in gray enamel; the water manifolds and valve plugs are polished brass, while the fly-wheel is finished and polished all over and heavily brass-plated.



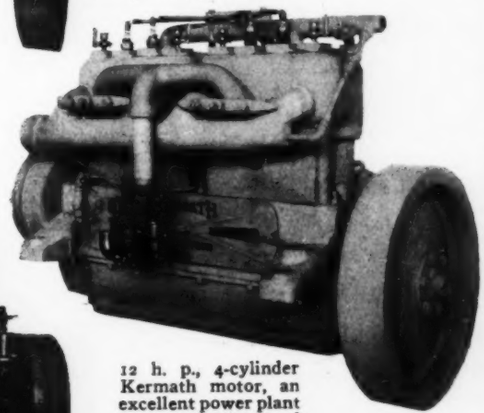
Mercury motor noted for its suitability for continuous work.



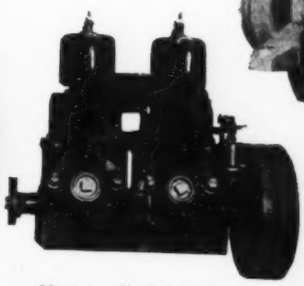
14 h. p. medium duty Stanley motor equipped with jump spark ignition.



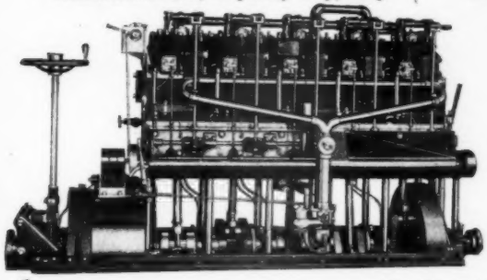
4-cylinder Standard motor, with 1914 improvements, manufactured by the Standard Motor Construction Co., of Jersey City, N. J.



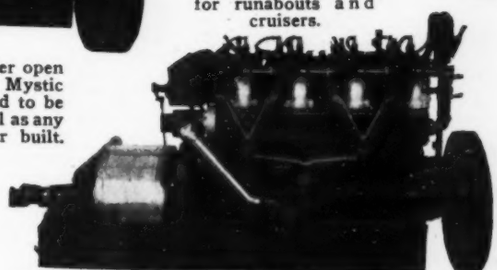
12 h. p., 4-cylinder Kermath motor, an excellent power plant for runabouts and cruisers.



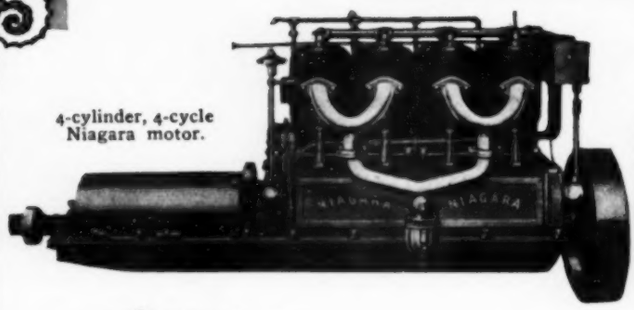
New 2-cylinder open base, 2-cycle Mystic motor claimed to be as economical as any 4-cycle motor built.



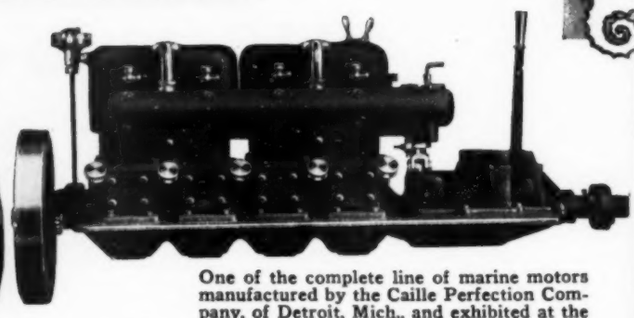
5-cylinder Murray & Tregurtha engine, brought up to date, and noted for its reliability.



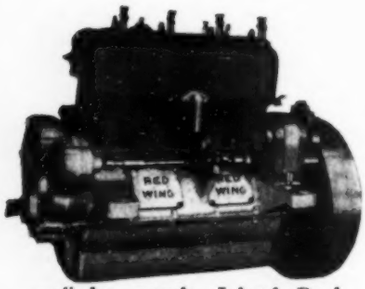
Well known 4-cylinder Lamb motor, to which line several new models have been added this year.



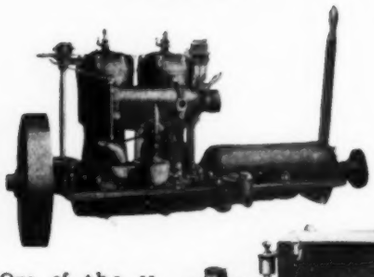
4-cylinder, 4-cycle Niagara motor.



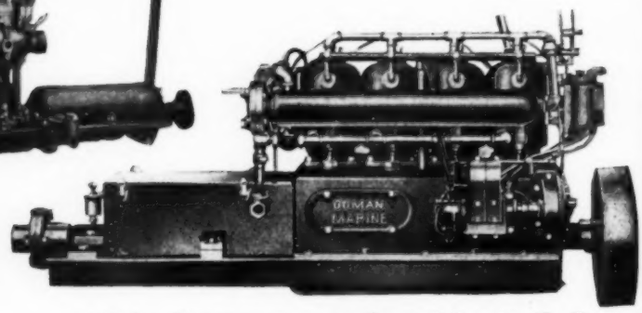
One of the complete line of marine motors manufactured by the Caille Perfection Company, of Detroit, Mich., and exhibited at the New York and Chicago Shows.



4-cylinder, 4-cycle, L-head Red Wing motor, developing its power at high speed.



One of the 11 models manufactured by the Ferro Machine and Foundry Co., of Cleveland, Ohio.



4-cylinder Doman motor, manufactured by the H. C. Doman Co., of Oshkosh, Wis.

The H. C. Doman Company, Oshkosh, Wis., are exhibiting at the New York and Chicago Shows practically their complete line of marine engines, including the medium-duty, high-speed and heavy-duty motors. In the medium-duty class there are nine motors, ranging from a two-cylinder, 6 h.p. machine to a six-cylinder engine of 45 h.p. There are three high-speed motors, and, of these, their Model 10 of 25-35 h.p., with cylinder dimensions of 5" x 6", is the smallest. The next in size is a six, developing 40-50 h.p. at 700-900 r.p.m., and the largest is a 55-75 h.p. six, with bore and stroke of 6" x 6", turning over at the same speed. Of the heavy-duty motors, the 16 h.p., two-cylinder is the baby of the family. This motor, fully equipped and with salt water fittings, sells for $1,190. The sizes range up from this machine to the 60 h.p., six-cylinder engine which sells for $3,420, fully equipped. All these motors are of the four-cycle type.

The Hartford Suspension Company, Jersey City, N. J., are confining their exhibit at the New York Show this year to their Hartford Electric Lighting and Starting System, which is being used on motor boats as well as automobiles. This system is composed of but six lightweight parts, all of which, however, are of rugged construction. The operation of this device is as follows: A short lever is depressed, and at its first movement of travel starts the electric motor spinning at a high speed. By the time the lever has been depressed so that the driving mechanism is engaged with the gasoline motor, the starter is turning over several thousand r.p.m., and there being a fly-wheel attached to the electric motor enough energy is stored in it, added to the torque of the motor, to turn over the heaviest engine 150 r.p.m., the gear reduction being 75 to 1.

The Ferro Machine & Foundry Company, of Cleveland, Ohio, are represented at the New York Show by a complete line of their marine engines, there being 11 models ranging in size from 3 to 25 h.p., with a combination of reverse gears, Bosch high tension magnetos and Ferro rear starters. The Ferro line for 1914 consists of 3, 4, 5½ and 7½ h.p. motors in single cylinders; 6, 8, 11 and 15 h.p. in two cylinders, and 12, 17 and 25 h.p. in three cylinders. The prices range from $60 to $500. All models are fitted with jump spark ignition, and Bosch high tension magnetos are furnished at additional charge. The Ferro exhibition is under the management of Mr. Von Culin, who is now salesman for the **Consolidated Gas & Gasoline Engine Co.,** New York, who have recently been appointed New York distributors for the Ferro Company.

The Caille Perfection Company, of Detroit, Mich., whose exhibit at the New York Show is handled by the **E. J. Willis Company,** New York, will also exhibit at Chicago. Their line of marine engines is an unusually complete one and consists of the following models—2, 2½, 3½ to 4 and 6 h.p., single-cylinder type, 8 and 14 h.p., two-cylinder type, 12 h.p., three-cylinder, 30 h.p., four-cylinder, 8 h.p., two-cylinder, and 16-18 h.p., four-cylinder unit power plants, 8 h.p., single-cylinder and 18-20 h.p., two-cylinder heavy duty engines. The Caille line is so well and favorably known that it is hardly necessary to comment on it. However, the company state that they have laid their plans so as to take care of a larger volume of business in 1914 than they did in 1913, although 1913 was by far their largest year. No material changes have been made in their motors, but by adding a lot of improved machinery to their already well equipped plant they state that it has given them one of the best equipped engine plants in the country. Their careful system of testing and their liberal guarantee will be continued.

The Niagara Motors and Manufacturing Company, Dunkirk, N. Y., are displaying a number of their models of marine engines at the Garden. Niagara motors are all of the 4-cycle type, and range in size from 5 h.p. to 65-90. There are two two-cylinder models and two sixes, the others in the line being four-cylinder engines. All models except the twos are built with either iron or aluminum crank case, and the lighter machines of the same bore and stroke are rated at about 50 per cent. higher horsepower than the engines having iron base and crankcase.

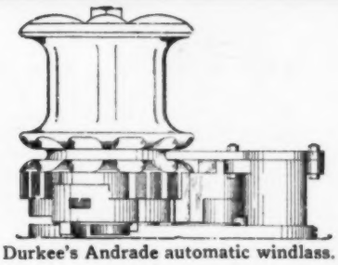
The Red Wing Motor Boat Company, Red Wing, Minn., will exhibit one of their Thorobred motors at the Chicago and Toronto Shows. This motor, which has been described before in these pages, is a monobloc, four-cylinder, four-cycle, L-head machine delivering its power at high speed. The motor is designed throughout with a view to compactness and simplicity, yet allowing the greatest degree of accessibility and provision for necessary adjustments. The lubricating system is of extreme simplicity and as worked out in this motor attains a high degree of efficiency. Liberal water jackets keep the motor cool under most trying conditions. In every part of the motor there is evidence of extreme care in selecting material best suited for the service which it is called upon to perform.

The Water Craft Company, of New York, have a very complete exhibit in two sections at the New York Show. They are displaying in Block "A" their Dandy Dink powered with a two-cylinder Brownie engine made by the **Brown Gas Engine Company,** of Schenectady, N. Y., for whom they are the New York agents. The propeller equipment is a 12" special Roper safety propeller outfit. They also have a full line of Wisconsin Valveless engines made by the **Wisconsin Machinery and Manufacturing Company,** of Milwaukee, Wis., including their full line of detachable row-boat motors. The full line of Brown engines is shown and a complete line of Roper propeller wheels and safety couplings. In addition, they are exhibiting a full line of their new solid propeller wheels put out under their own name in two types, namely, the Shamrock and the Harthorn. They are showing in their balcony extension a line of auto boat tops, spray hoods, Kapoc pillows and cushions manufactured by the **Theo. H. Masten Company,** New York, and a new reverse gear, besides many other accessories.

The Gasoline Engine Equipment Company, New York, are exhibiting at the New York Show complete lines of Van Blerck and Stanley motors and a Reliance 29-foot speed boat powered with a Van Blerck motor. The Van Blerck line as shown consists of one two-cylinder, medium duty motor of 14 h.p., and the same motor in four and six cylinders; high speed motors in four, six and eight cylinders with bore and stroke of 5½" x 6" and respective horsepowers of 50, 100, and 130, and their model A4, also a high speed motor. Stanley 2-cycle motors in 3, 5 and 7½ h.p., single cylinders are shown, and 6, 7, 10, 14 and 15 h.p. in two cylinders. They have also a 1½ h.p. Cady 2-cycle canoe motor, as well as a four-cylinder, 4-cycle 4½" x 5½" unit power plant manufactured by themselves.

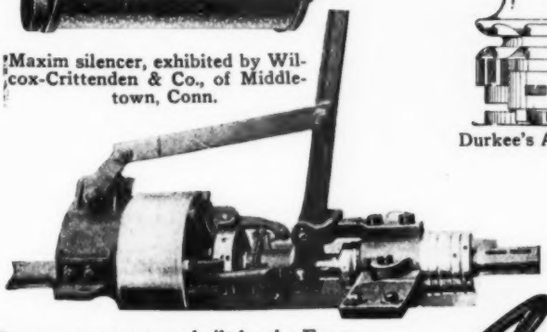
The August Mietz Iron Foundry and Machine Company, of New York, are showing a number of their Mietz & Weiss marine engines at the New York Show, a 6 h.p., horizontal engine and an M. & W. reverse gear in section. Of the marine engines the largest is a 100 h.p., direct reversible oil-burning motor. Then there are a 22 h.p., three-cylinder motor, a 10 h.p., two-cylinder motor, and a 3½ h.p., single-cylinder machine, all fitted with M. & W. reverse gear.

Maxim silencer, exhibited by Wilcox-Crittenden & Co., of Middletown, Conn.



Durkee's Andrade automatic windlass.

Two blade Thompson automatic feathering propeller, shown by the Noyes Machine Co.



Paragon reverse gear, built by the Evans Stamping & Plating Co., of Taunton, Mass.

Joe's reverse gear, manufactured by the Snow & Petrelli Mfg. Co., of New Haven, Conn.

Auto steerer built and exhibited by Wilcox, Crittenden & Co.

The Bosch Magneto Company, New York, have on display at the New York and Chicago Shows a number of new accessories, in addition to their well known line of ignition specialties. Their magnetos, which have been used with considerable success during the past season on fast boats, are on display, and a number of styles of spark plugs. This make of plug has become almost as prominent as Bosch magnetos. Maple Leaf IV, the fastest motor boat in the world, used them in the B. I. T. races. Then there is the Bosch spark plug hood, which is a steatite cover fitted over the standard plug, making it as well as its electrical connection impervious to water or moisture. One of the latest specialties perfected is the Bosch press-button key-switch. This supersedes the Bosch spring plunger and key-switches. In addition to these accessories, there still remain Bosch cable, flexible couplings and oilers, with many other novelties as well.

The Aplco electric lighting system exhibited at the New York Show by the **Apple Electric Company,** of Dayton, Ohio, has undergone no important changes during the year, it having been felt by the manufacturers that a high degree of perfection has already been attained. The Aplco equipment, apart from the lamps, consist of three features—dynamo, storage battery and controller. As exhibited, this equipment is laid out as if it were installed in a boat. The independent lighting system for large yachts, consisting of gasoline motor and direct-connected dynamo, is also shown. Another exhibit is their self-starter, which is here shown for the first time, arranged for marine installation.

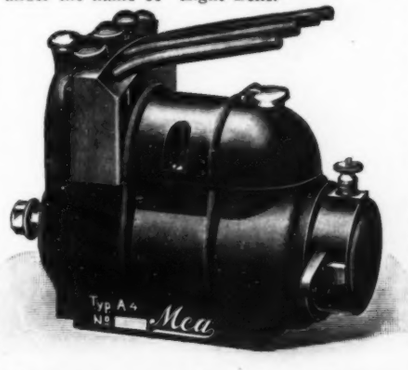
The A. S. Campbell Company, Boston, Mass., are displaying at the New York and Chicago Shows their complete line of motor boat electrical specialties, and, in addition, will make a demonstration of the Cello metallic hot-water bottle. This is a simple canteen-shaped, flat, convenient bottle, made of the very best tempered metal, 75% of which is copper, and it is beautifully nickel-plated. The claims made for this bottle are that it is absolutely indestructible, that it fits every part of the body, and emits a dry, healthy heat. One of the well known specialties produced by this company is their Cello searchlight, which is guaranteed to do the work on six dry cells. It is said of this light that its rays are so powerful that type of the size used on this page can be read by a person a thousand feet removed from the light.

George B. Carpenter & Co., marine outfitters, of Chicago, Ill., will exhibit at the Chicago Show a representative line of motor boat accessories and marine hardware. The accessories carried by this concern range from cup hooks to bathtubs and back through engineers' outfits and clutches to spark plugs. The leader of their very elaborate exhibit, however, is a new steerer which they are putting on the market this year, and with which they have had very marked success. This steerer has some very excellent features incorporated in its design.

Wilcox, Crittenden & Company, Middletown, Conn., are showing at the Garden, a representative line of marine hardware, boat fittings, etc. One of their leaders is the Maxim marine silencer, which works on the same principle as the famous Maxim gun silencer. This silencer, which is made in a number of sizes for various motors, is guaranteed to completely silence the exhaust. Briefly, the silencer consists of four concentric rings, into the smallest of which the exhaust gases discharge. The cylinders are so designed that the gases must change direction each time they enter a larger cylinder. Thus, their force is dissipated by the time they reach the largest cylinder and the outlet passage. Another leader of this company's line is the Auto Boat Steerer, and there are devices of all kinds to meet every need of the motor boatman.

Chas. P. McClellan, of Fall River, Mass., is exhibiting this year at the New York Show his line of patented auto boat tops, life-preserving cushions, spray hoods, etc. The spray hoods are of simplified construction, and the tops, which are of the one-man variety, can be raised and lowered without detaching any part. The tops, which are waterproof and very serviceable, add to the appearance of any boat to which they can be applied.

The Union Stove Works, of New York, manufacturers of a line of stoves, ranges and furnaces, have taken space B-4 in the balcony extension at the New York Show, where they are exhibiting a line of coal stoves for boats under the name of "Eight Bells."



Mea magneto manufactured by Marburg Bros., of New York.

The David B. Crockett Company, Bridgeport, Conn., makers of fine varnishes, occupy a space in the balcony section of the Garden where their sales force is in attendance for the purpose of displaying their line and entertaining customers. Among the many varnishes, fillers, interior finishes, etc., made by this company, perhaps the marine varnish known as Spar Composition is the best known. It is claimed for Spar Composition, which has been on the market fifty years, that it is unequaled for outdoor work, and that it will not spot, crack, blister or scale. Other well-known items in this line are No. 1 Preservative, an excellent interior finish; No. 2 Preservative for a high gloss finish over No. 1, Spar One Coat Finish, a quicker drying varnish than Spar Composition, Waterproof Floor Varnish, Bathroom Finish, Enamel Finish, etc.

Marburg Bros., Inc., New York, are showing at the New York Show, their line of magnetos, SRO ball bearings, and their new Marburg-Lucifer electric lighting outfit driven from the fly-wheel, but the item of most interest to motor boatmen is their latest type of magneto with a stationary housing, which is said to be absolutely waterproof. This instrument is now produced in various sizes suitable for four-cylinder and six-cylinder motors. It has a stationary housing, inside of which is shifted the bell-shaped magnet, carrying with it the timing mechanism, thus conforming absolutely to the more widely known cradle type of Mea magneto. For motor boats the extra precaution against water is of particular value, and it is of interest to note that this type of Mea is largely used on European aeroplanes and motor boats, a boat equipped with one of them having won the German Emperor's Jubilee Motor Boat Races on Mueggel Lake.

The Snow & Petrelli Manufacturing Company, New Haven, Conn., as in former years, are exhibiting their gears and one-way clutches at the New York Show. Joe's gears are for all types of boats from the lightest pleasure boat to the big, heavy fishing boat, or the fastest speed boats. Joe's safety rear starter is also made by this company in two sizes up to 40 h.p. Larger ones than this can be made on order. These starters are equipped with a non-kick-back positive release and are furnished with frame or bulkhead bracket as desired.

W. & J. Tiebout, New York, are displaying at the Garden a number of marine accessories from their complete stock, among them being their "Star" air compressors and bilge pumps. The Star air pumps are especially handy things as they are not difficult to install, consume little power, and make it possible to have an efficient horn. These pumps are made in several styles, there being one which is driven by friction off the flywheel and another by a cam on the crank-shaft, the cam and fastenings coming as part of the equipment.

The W. S. Hall Company, of Rochester, N. Y., are displaying at New York a complete line of their well known "Reliance-Rochester" steering gears, both of the auto and cruiser types. The display consists of one of the popular scored drum types with fore and aft and regular controls; the maple drum with fore and aft controls, chain and sprocket, rack and pinion, and their styles "G" and "H" "Baby-Reliance." These styles are for small cruisers, etc. The "Unit Control" will also be displayed. This is a concentrated cruiser control. It centralizes the control of the steering, reversing and spark and throttle. A new scored drum cruiser control will also be exhibited.

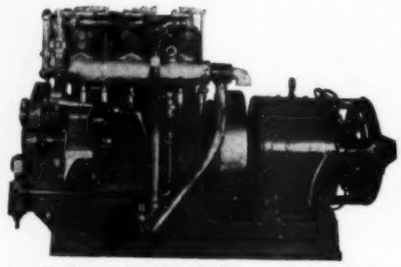
The Columbian Brass Foundry, of Freeport, L. I., have added to their well known line of Columbian propellers a new model known as the Ailsa Craig. This three-bladed wheel, made in even sizes from 12" up to 50", has as the greatest width of the blade up to 36", 40% of the diameter, while the width of the blades for the larger sizes is 33⅓% of the diameter. The Ailsa Craig propellers are guaranteed by the makers to be true screw and accurate as to pitch, while it is claimed that the workmanship and materials that go into them are unexcelled. The prices and discounts are the same as for styles A and G, three-bladed propellers, which this concern already has on the market. While this new propeller is their leader at the two Shows, the Columbian Company are also exhibiting their complete line of propellers, bronze rudders, etc.

The Edison Storage Battery Company, of Orange, N. J., are exhibiting at both the New York and Chicago Shows a representative line of their storage batteries for use on motor boats and motor yachts. One of the features of these batteries is their lightness and compact appearance. With every battery sold by the Edison Company goes a guarantee that, at the expiration of four years, it will still be capable of developing its rated capacity.

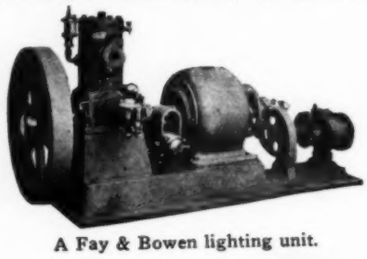
The Hyde Windlass Company, Bath, Me., are displaying at the New York and Chicago Shows their regular Hyde Turbine Type propellers. The manufacturers ascribe the success of these propellers to the fact that they are built on the true-screw principle, made from metal patterns accurately balanced, hand filed to remove all surface irregularities, and then polished. They have large blade areas, and are, therefore, particularly efficient in attaining the highest speed and also give the best results when used in connection with heavy-duty engines. Manganese bronze of the highest tensile strength is used exclusively in these propellers. It is the same metal that the manufacturers have used for the past 18 years in propellers furnished for navy ships and the merchant marine. It is guaranteed to meet government requirements for manganese bronze.

The Cape Cod Power Dory Company, of Wareham, Mass., who are exhibiting at the New York Show, make a specialty of three or four boats which are noted for their seaworthiness. One of these is a 28-foot cabin cruiser which for its length combines a great many advantages. The design is so laid out there are sleeping accommodations for two, toilet, sink, oil stove, running fresh water, tool, dish and clothes lockers, and an ample cockpit as well. A few of the other boats put out by this company are U. S. Volunteer lifesaving dories, a 16-foot lake and river boat, a 20-foot special motor dory, and shallow draft rowing skiffs in 10, 12, and 14-foot sizes, the last of which is especially adapted for outboard motors.

Byrne, Kingston & Co., of New York, are exhibiting in one of the balcony reservations at the New York Show, and at Chicago as well, a full line of their ignition specialties, consisting of magnetos, coils and spark plugs. A demonstration magneto, which, on being revolved by hand, shows the strength of the spark at the plugs, is shown. They are also displaying, and for the first time, a new carbureter which has been especially designed to work on kerosene. A number of the marine engines exhibited at the Shows are equipped with these carbureters.



3-cylinder, 7 K. W. Seabury generator set.



A Fay & Bowen lighting unit.

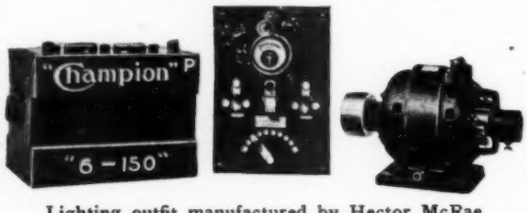
Out-board rudder shown by the Columbian Brass Foundry.

Mechanical Devices Co.'s compression coupling.

New Perfex All-In-One spark plug.

Sharp spark plug sold by Chas. E. Miller & Co.

A piece of T & C tiller rope



Lighting outfit manufactured by Hector McRae of Baltimore.

Chas. E. Miller, New York, is displaying a number of accessories at the New York Show which will be of interest to boating people. One of these, the Warren Auto Control Steerer, is made with controls fitted fore and aft, thus doing away with spiral connecting rods and bell cranks. Control levers are located in the wheel, which enables the operator to have complete control of the boat. Other items are the Crone gasoline mixer which is said to save from 25% to 50% of gasoline; the Crone valve dresser and reseater; Witherbee storage batteries; Sharp spark plugs, and Miller's Pan-American lubricants, besides many other accessories.

The Tucker & Carter Rope Company, New York, whose sole exhibit at this year's New York Show is their T. & C. tiller rope, announce that the worth of this rope is demonstrated by the annual increase in its sales. This waterproof linen-braided tiller rope, containing bronze rope center, is made of the best grade flax yarn, which is waterproofed before braiding, thereby insuring a thoroughly waterproofed rope throughout. The bronze rope core is made to a special analysis both for strength and flexibility and will neither shrink, rust nor stretch. It needs no further attention after being adjusted, and it is claimed for it that it will stand up beside any other known material under the same working conditions. It is made in all sizes from 3/16" up to 7/16" outside diameter, and is put up in coils of 1,000 feet each.

The Electric Goods Manufacturing Company, Canton, Mass., are exhibiting this year, at New York, several new models of Perfex ignition equipment for 1914. In addition, they have a new model of the Perfex All-In-One which is sold at an advance in price over the previous model. Of particular interest is the new "Master All-In-One." This has three connections for primary winding. It contains an auxiliary magnet which operates the vibrator, and, as its name implies, it is a combined All-In-One and Master Vibrator. It is intended for use in connection with the Perfex ignitor, and will, itself, operate one cylinder while the little igniters operate the other cylinders on a multi-cylinder engine of any size. For marine engines this combination will be very convenient and economical.

The Milwaukee Yacht and Boat Company, of Milwaukee, Wis., are among the exhibitors at the Chicago Show. This concern builds a number of stock runabouts and the work on them is all of the best. One of these, the Milwaukee 33-foot runabout, has a beam of 5 feet 6 inches and is a good stiff boat, seaworthy and comfortable. It is heavily constructed and divided into three watertight compartments, it being made with two watertight bulkheads. Powered with a six-cylinder, 75 h.p. motor, a speed of 26 miles an hour is guaranteed, and less power can be installed if speed is not a desideratum. The 26-footer which they put out embodies the same details of construction as the large boat, and with a 30 h.p., four-cylinder motor attains a speed of 18 miles an hour. A 25-footer is gotten out for those who want a less sumptuous boat than the above two, but who desire Milwaukee quality. This boat with a smaller motor has a speed of 14 miles. Two other models are shown.

Bruns, Kimball & Co., New York, are handling a number of lines of marine engines at the New York Show. Among these are the Sterling, Eagle, and Kermath. In addition to selling these engines this company does a big business in buying and selling second-hand motors. It looked to the company at one time as if they would have to discontinue their policy of taking used motors in part payment for new ones, as an immense stock had been accumulated, but the opening of their branch store at Philadelphia provided an outlet for these rebuilt machines, and the policy is continued without reservation. Accordingly, at the Show, the man who wishes to trade in his engine will be well cared for.

The Curtiss Aeroplane Company, Hammondsport, N. Y., is exhibiting at Madison Square one of the new Curtiss Flying Boats. There have been numerous refinements to this craft since it was first put on the market, and the latest model sees the boat equipped with wide mahogany hull with double cockpit. Its most striking departure from previous models lies, however, in the double V bottom. There is a V at the bow designed to eliminate the bow wave by affording an easy entrance when the boat is running in the water; and a V bottom at the step, giving an easy entrance when the boat descends to the water from above. The boat on exhibition is, of course, equipped with a lightweight Curtiss motor. These motors are said to have more power for weight than any other made.

The Texas Company, of New York, have an extremely interesting exhibit at the New York Show, and the feature of their booth is a unique star-shaped stand for displaying their line of high-grade oils. The star itself is of glass with a brass border, and on its face in small electric bulbs, the word, "Texaco" and the letter "T." Around the border of the star are a series of diverging rays, which are nickel-tipped glass bulbs filled with various colored oils, ranging from a nearly water-white to a deep red. Behind the star is a white ground-glass shield, in back of which are electric lights and powerful reflectors. The whole effect when fully illuminated is very striking. This stand also has its useful side, for any of the firm's representatives can place his hand on the particular grade of oil which he desires to show and by removing the glass container enable his customers to get a closer view of the oil.

The Smith-Serrell Company, Inc., New York, are showing, at the Garden, Francke flexible couplings in all sizes for motor boat use suitable for any shaft up to 4" in diameter. They are also illustrating their line of hydroplane couplings of the light-weight, all-steel type, suitable for shafts up to 2⅛" when carrying such heavy powers as are usually met with in hydroplane work. They have eleven different cast iron motor boat couplings suitable for the ordinary motor boat, and five of the steel couplings for hydroplanes. An exhibit of especial interest is their demonstration rig, showing the exact difference in friction between an ordinary rigid coupling and a Francke flexible coupling when applied to propeller shafts.

Edward Smith & Company, of New York, are demonstrating the merits of their well-known marine varnishes, Spar Coating and Marinite at the Garden Show this year. Spar Coating is a fine finish for spars, decks, deckhouses, and all woodwork exposed to the violent attacks of the weather. The booth which this company has occupies two spaces in the gallery, and is designed to represent a marine scene. With a lighthouse flashing its signal in the background, and a working model of a cabin cruiser plowing the waters of a harbor in the foreground, it is a very realistic scene. The two varnishes mentioned above are also shown on a number of beautiful mahogany panels.

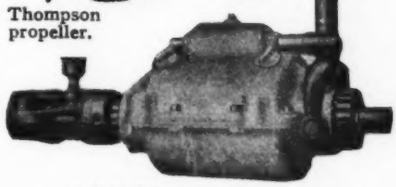
Morris M. Whitaker, N. A., Nyack, N. Y., will be at the Chicago Show with full lines of blueprints and photographs of boats of his design, so that prospective customers will be able to judge for themselves of what he has done and what he will be able to do for them.

C. D. Durkee & Co., New York, are on hand at both the New York and Chicago Shows with a representative line of marine hardware and things for the motor boatman. In spite of their recent fire, the Durkee stock is one of the largest to be found, and the exhibits from it are well chosen. The well known Reliable fire extinguisher is to be seen, and the Andrade automatic windlass which, by the mere moving of a handle bar heaves in, lets go, or brakes; other features are the Patterson trap ventilator which permits the free and unrestricted entrance of pure air into the boat, and is yet so designed that water cannot come in;

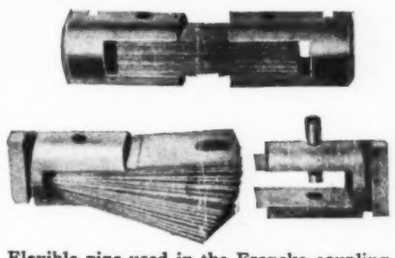
Launching life boat device of the Marine Efficiency Company

Wisconsin detachable motor

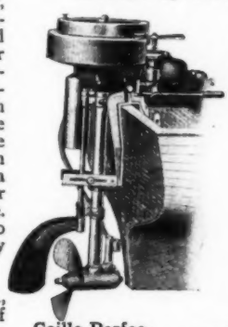
Thompson propeller.



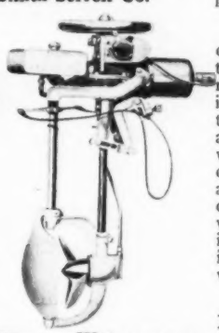
Carlyle-Johnson reverse gear.



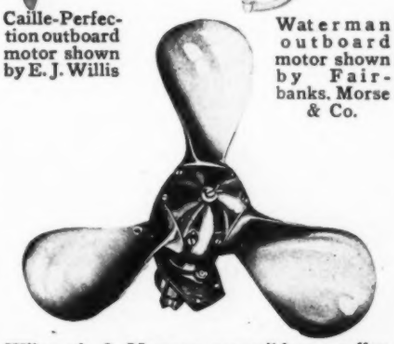
Flexible pins used in the Francke coupling, exhibited by the Smith-Serrell Co.



Caille-Perfection outboard motor shown by E. J. Willis



Waterman outboard motor shown by Fairbanks, Morse & Co.



Wilmarth & Morman reversible propeller.

and the Crescent ball-bearing anchor which can be had in weights from 5 to 300 pounds.

The Gray-Hawley Company, Detroit, Mich., will make a complete display at the Chicago Show of their air compressors and whistle outts, spark, throttle and reverse controls, filters, mufflers, fog bells, combination telescoping flag poles and aft lights, and special fittings of various kinds.

Chas. H. Gillespie & Sons, Jersey City, N. J., are at the Garden this year with their line of Monarch varnishes. Monarch Spar is used and has been used for a number of years by some of the largest steamship companies leaving American ports, and the makers state that it does not require a midsummer refinishing, as it withstands atmospheric changes; is sun and waterproof, and holds its luster an unusual length of time. Monolac, in colors, is another preparation, especially made for interior woodwork of motor boats, and Monarch engine enamel, which has the faculty of making old engines look like new, is made in all the principal shades. Monarch Bull Dog paint and varnish remover cream is a slow-drying, non-evaporating remover that the makers state works instantaneously. At their booth this company will give away a gasoline gauge which is very useful and practical.

The Janney Steinmetz Company, of New York and Philadelphia, are exhibiting their seamless gasoline tanks of various sizes, air tanks and air starter tanks, as well as numerous ideas and developments in the art of cold drawn steel. Among these, one feature is known as the Steinmetz patent reserve compartment, contained entirely within the tank, so that there is no trouble through leakage, and as the reserve tank automatically fills itself as the tank is filled it can not be forgotten. The beauty of this reserve tank is that it will supply the boatman with enough fuel to get to a supply station if the main tank runs dry.

The Wilmarth & Morman Company, of Grand Rapids, Mich., are showing a full line of standard propellers at Chicago, and two or three reversing propellers for which special advantages are claimed. Of their W. & M. heavy-duty reversing propeller the company says that a large number have been used during the past season on tug boats, ferry boats and large fishing boats with the utmost success. Two boats used for carrying dynamite are equipped with these propellers, and, although they are in the water the year round, the propellers have given very efficient service.

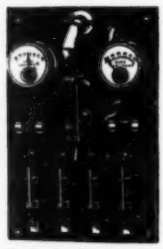
Valentine & Company, New York, have on exhibition at the two Shows as their leader this year as in years past, Valspar, "the varnish that won't turn white." This spar varnish is well known to motor boatmen, and some of the qualities and superiorities claimed for it are as follows: It positively will not turn white when exposed to rain or moisture, salt or fresh water; it dries dust free in two hours, and hard overnight in any temperature; it becomes hard enough to walk on in 24 hours, and will not chip, crack, peel, or scratch white; it is not injured by washing with soap and water; it is pale and brilliant when first applied and wears bright.

The Pyrene Manufacturing Company, New York, have on display at the New York and Chicago Shows their Pyrene fire extinguisher, together with various types of brackets for attaching the container to walls or bulkhead. Pyrene is a combination of powerful non-poisonous gases in liquid form which when directed on a burning surface blanket the flame. Demonstrations of how Pyrene subdues a flame, and of how by reason of its non-conductivity it can be played on an uninsulated electric circuit are made.

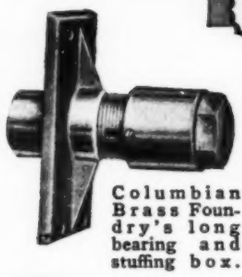
L. O. Koven & Brother, New York, are showing at both New York and Chicago a line of their tanks, mufflers and underwater exhausts. Their tanks are known by the firm name and are made for every conceivable purpose to which they may be put aboard a boat, including compressed air tanks and receptacles for gasoline, kerosene, lubricating oil, and fresh water.

Monarch carbureter for all types of motors.

Electric speed indicator, manufactured by the Electric Tachometer Co., of Philadelphia.

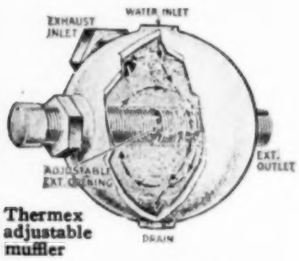


Switch boards shown by the E. J. Willis Company.

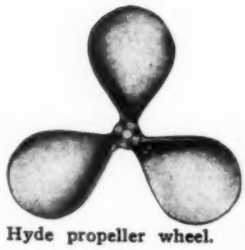


Columbian Brass Foundry's long bearing and stuffing box.

E. J. Willis' new "Mitchell" port light.



Thermex adjustable muffler



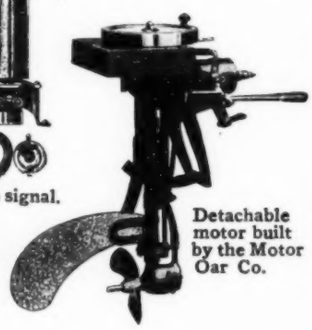
Hyde propeller wheel.

Willis sailing lights.

Evinrude detachable row boat motor.

Intermediate bearing of the Mechanical Devices Company.

Wilco signal.



Detachable motor built by the Motor Oar Co.

The Electric Tachometer Company, Philadelphia, Pa., are displaying at Space 19, at the New York Show, a complete line of tachometers manufactured by them. For all marine service, these instruments are equally serviceable for high and low-speed engines. The system is electrical, permitting the indicator to be placed in any desired location on a boat. It is possible with their system to operate more than one equipment from one generator, as in the case of their Navy Type they have instruments placed in the engine-room, pilot-house and bridge. The instruments can also be furnished to read ahead and astern, serving, in this instance, as a check between engineer and pilot.

The Evinrude Motor Company, of Milwaukee, are showing at both the New York and Chicago Shows an interesting exhibit of the Evinrude detachable rowboat motor attached to canoes and rowboats of all descriptions. This year the Evinrude motor is improved by the installation of a built-in reversible magneto with Bosch plug. The magneto adds nothing to the weight of the motor, as it is contained in the fly-wheel. Another advantage of this location is that the magneto is so constructed that rain, waves and moisture will not affect it. It is said that it will even continue to give current when completely submerged. The magneto has no brushes, bearing or commutators, and, in fact, has but one moving part. As most people know, the Evinrude is not equipped with a rudder, as it has been found that the boat to which it is attached turns very readily by merely turning the propeller in either direction. The Evinrude is made in 2 and 3½ h.p. sizes.

The Monarch Valve Company, Brooklyn, N. Y., are displaying at the Garden a complete line of their gas engine specialties which includes carbureters, check valves, stuffing boxes, etc. Their Monarch Standard carbureter differs this year somewhat from their previous years' models, although no radical departure in construction has been made. All carbureters now manufactured by them are supplied with an improved form of needle valve and lever connecting it with the float. This needle valve extends through the cap, and is thus firmly guided at top and bottom. It is claimed for this new construction that it prevents any remote possibility of leaking or flooding. Magnetos, spark coils, air valves, pump suction connections and many other devices are also found in this line.

The E. J. Willis Company, New York, are showing a number of accessories and novelties at the Garden which will be of interest to the boatman. One of these is their cream freezer which freezes cream without turning. This Vacuum Freezer is made in two sizes, the larger size holding enough for nine people, and it is claimed that fifteen minutes after the cream and ice chambers have been filled the ice cream will be ready to serve. The new bronze "Mitchell" port light which they show is so designed that its frame is fastened to the wood work inside, thus eliminating any bolts or screw holes on the outside. The inside edge of the rim is beveled and flush with the inside of the glass rim when closed, thus insuring the greatest possible light for the opening. Another accessory which should attract a great deal of attention is the "Wilco" electric signal. This new "Wilco" signal has been especially designed for Class 1 boats, and it fully conforms with the laws.

The Mechanical Devices Company, Inc., Watervliet, N. Y., are exhibiting practically a full line of their shaftlogs, struts, universal joints, flexible couplings, etc., at the New York Show. One of their leaders this year is a new style of rudder for launches and speed boats only, which is particularly suited for fast boats. This rudder is finished for either single or double-rudder system, and with arm or quadrant as preferred, and it can be installed either on the transom or through the keel under the after deck. Other devices exhibited by this company which find favor with boat builders and buyers are their automatic aligning stuffing boxes, auto steering-wheels, Fishtail weedless wheels, speed wheels, shaft hangers, submerged exhausts, etc.

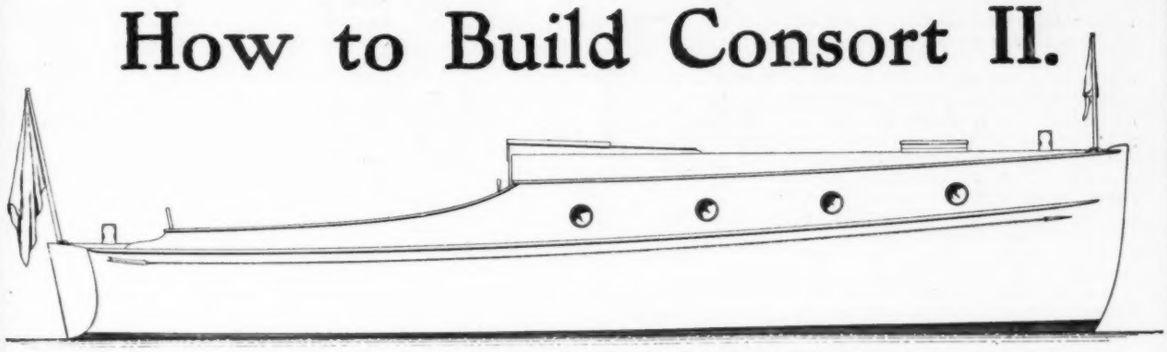
The Thermex Silencer Works, East Boston, Mass., are showing at New York and Chicago their improved Thermex muffler. This muffler, which is made in the shape of a ball, has many claims made for it. For instance, it is said that it permits the least possible noise with maximum revolutions because of the adjustable opening which regulates the flow of exhaust gases from the expansion chamber to get the best results from each particular installation; it is easy to install, as it can be placed at any angle above the waterline; because of the perfect mixture of circulating water and the exhaust gases the high temperature of the gases on issuance from the cylinders is cooled down to about 100° at the outlet from the Silencer. Other claims for it are that there can be no clogging, no muffler explosions, no salt deposit, and no back pressure.

The Evans Stamping and Plating Company, Taunton, Mass., have on exhibition at the two Shows models of their complete line of Paragon gears which are used by over 50 engine manufacturers in this country. They have also on exhibition models of their line of racing gears which were used on some of the best racing boats of the past season. The Paragon line of gears, which cover practically every grade of work to which motor boat reversing mechanism can be put, are all built according to the same designs and of the same materials. The forward drive is through a multiple disc clutch with excess friction surface, and the reverse drive is through four pinion gears equally distant from the center line of the gear, which does not allow any eccentric loading. There are only two adjustments—one for the forward drive and one for the reverse—which are in plain sight and easily "get-at-able."

The Stromberg Motor Devices Company, of Chicago, Ill., are displaying at Madison Square Garden a full line of their marine carbureters. A new carbureter which is said to have some unusual and commendable refinements is the feature of this display.

(*Continued on page 65*)

How to Build Consort II.



Outboard profile of the 28' cruiser drawn to the exact scale of ¼"=1'.

Full Detail Instructions and Plans for Constructing a Seaworthy One-Man Real Cruiser. A Practical Boat Having a Length of 28' O. A., a L. W. L. of 26' 6", and a Beam of 8'.

By Frederic S. Nock.

Part I.

This cruiser, designed especially for Motor Boating by Mr. Nock, is by far the best one-man boat which has ever been turned out for the amateur to build. The description of how to construct this boat is complete in every detail, but not unnecessarily lengthy. The usual discourse on how to drive a nail straight, etc., which generally accompanies articles of this kind has been omitted, and just the important construction work included. The design itself is one which is thoroughly practicable in every respect, and great stress has been laid on developing one which would be absolutely seaworthy. Due regard has been given to all theoretical considerations, such as centers of gravity and buoyancy, trim, etc., so that the amateur should follow the plans exactly and he will be sure of a fine boat in the end—one that he will be proud of and feel safe aboard in all kinds of weather.

The second installment will appear in the March number, and Part 3 with complete specifications in the April number of Motor Boating.—Editor.

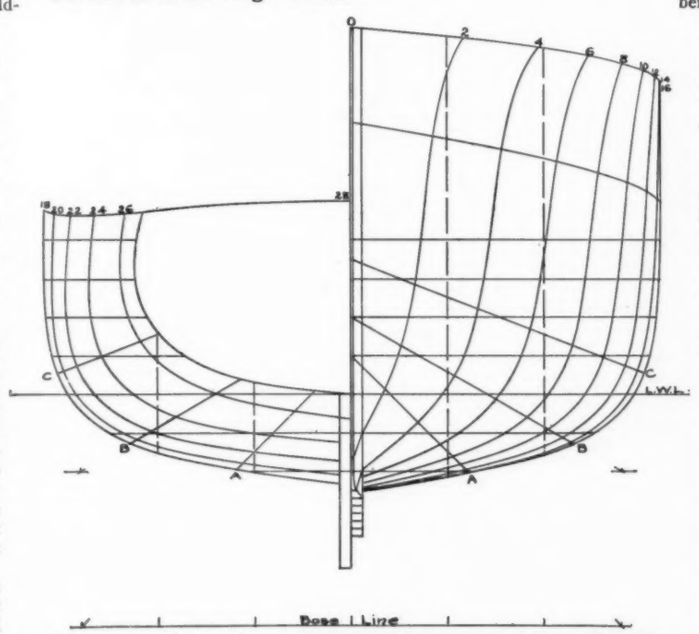
THE accompanying illustrations are those of a small cruiser that was designed primarily with the idea of being easily constructed, in order that the average amateur who has some practical knowledge of the use of carpenter's tools could build such a boat.

No doubt many will criticise same; the stern should be different, the stem should have more rake, etc., but the explanation given above should be a sufficient excuse for the general shape of the boat not meeting the requirements of all.

If the instructions for building this boat are followed carefully, the builder will be surprised to find out how much he has learned about boat building by the time he has completed this craft. Then later on, the knowledge he has gained will be of material assistance when he again considers the building of a larger boat. Some of you will smile at this and no doubt will think that a boat of this size would be as large as you would ever need, but I have been there, and know how natural it is for one to realize quite often that the boat which he thought so large and commodious is just a trifle too small—and the best, or worst, of it is that the average motor boat owner is beset with this idea.

I had thought some of making a set of drawings of each mould and marking the dimensions on same, but upon second consideration I concluded that it would be better to go into the matter properly, and then when you do want a larger boat, you can work directly from the plans your architect furnishes you, and not have to go to him and request that each part be drawn out separately.

Many of the magazines devoted to motor boats have published articles on the building of boats, and, as this matter has been dealt with very thoroughly by practical men, it is more than likely that any one contemplating the building of a boat has spent some time around a boat shop or seen boats being built by his friends, so I will dispense with the usual lengthy details about laying down the lines, and try to make it as concise as possible.



Body Plan of the Cruiser: to the right the forward sections and on the left the after sections. Scale ½"=1'.

Before you start to build you must have a full-size drawing of the "lines." Copy the lines exactly, using the table of offsets to get the exact dimensions. I would advise copying all the lines, for then if an error occurs, it is much easier to find same by referring to the dimensions given of the half breadths on the waterlines, the diagonals, etc. Use good, straight grain pine for the battens, so that they will bend fair and true, and, above all, be sure that each line is correct before you make another one.

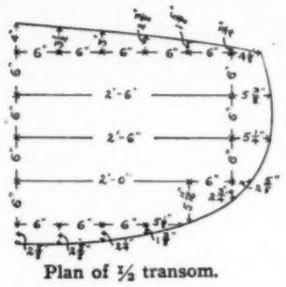
When you have the lines "laid down," or, in other words, have a full-size drawing of the lines, you can proceed

to get out the moulds. The material of which these moulds should be made depends, to a great extent, upon the location, but any good lumber, such as hemlock, spruce, fir, pine, cedar, or other material that can easily be procured, will be satisfactory. It should be dry, and planed two sides.

The lines as drawn are to the outside of the plank, and, as you want to fit the plank over these moulds, they must be reduced the thickness of the plank, or ⅞ inch. You can make your moulds to the outside of the plank and then saw off the required thickness, but the better way is to make a line ⅞-inch inside each of the lines representing the stations or moulds, and cut to the required size.

The lines show the stations every two feet, and if you want to have the boat work out nice and fair, you should make a mould for each station. The practical builder would discard each alternate mould except, possibly, the last two at either end, and you could do this, provided you used battens that were heavy enough to keep the proper shape and hold the frames in place without bending same.

The lines show but one-half of each mould, but as both sides should be alike, I would suggest that you mark one side, saw it out to shape and then make a duplicate of same for the other side. This can readily be done by fastening the piece that is marked on another piece of board and sawing out the two pieces at one time, especially if you have access to a band or jig saw. Cut out all your moulds and then proceed to fasten them together. You will find that some of the moulds would require very wide stock if you wanted to get each half out of a single piece, and, as there would be little or no advantage in same, you can use narrow widths of stock and make up the large moulds of two pieces to each side, butting the joints together and securing them with cleats well fastened. Keep the edges of the cleats in from the outer edge of the mould about 2 inches, in order not to interfere with the frames, as some of them are close to the moulds. Lay the two

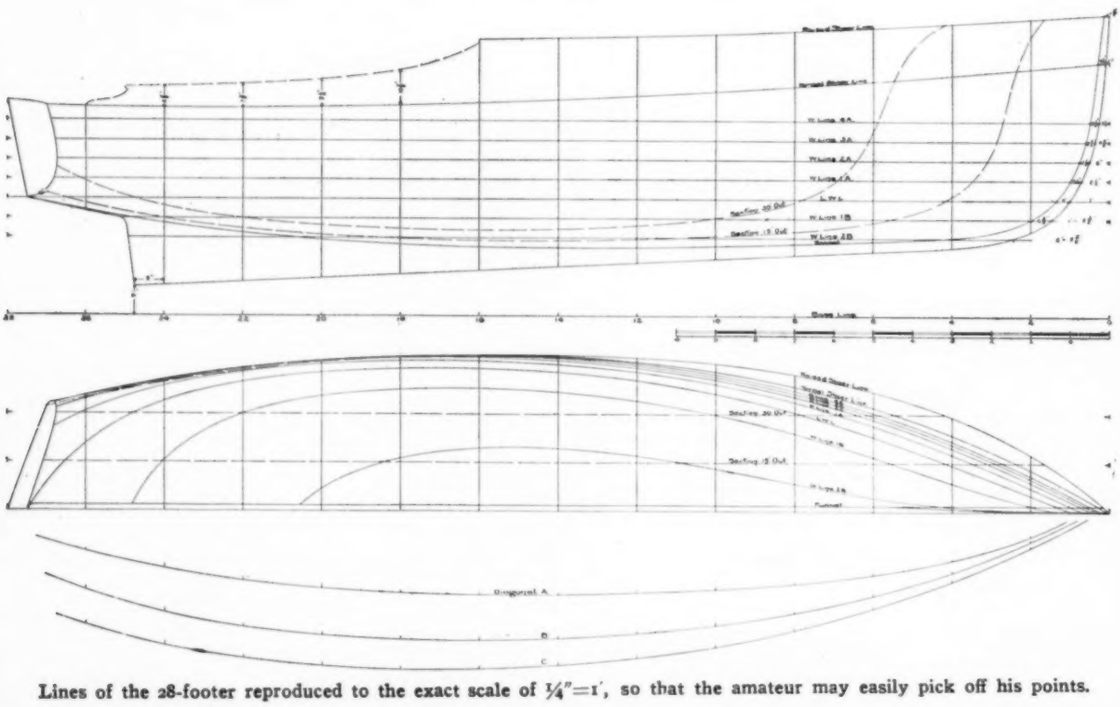


Plan of ½ transom.

halves of the moulds on a flat floor and fasten the upper part with a piece of wood about 5 inches in width; this is called a cross pawl. In order to assist you, I would suggest that you place these cross pawls so that the lower edge of same is set to the line representing the normal sheer on each mould. Cleat the lower parts of each of the moulds together with a piece of wood about 2½" x 2½", and you can fasten through these blocks to the keel to hold the moulds in place. It is a good plan to put a couple of braces, set diagonally, on each of the largest moulds, in order to insure them not getting racked out of shape in handling.

The next thing you can start to work on is the keel. This is to be of oak, and if you can produce a plank long enough to make it in one piece, so much the better, but as some of you may find it a difficult matter to procure a piece of oak longer than sixteen feet, it would be necessary to make a splice in the keel. If this has to be done, I should suggest making the forward end about 16 feet in length, and the piece for the after end should be about 10 feet in length. This would allow about 3 feet for the splice. Do not make this splice come to a shim point on either of these pieces, but make the end of the splice, or nib, about 1 inch deep, and have the forward end of the splice on the after piece of the keel overlap the splice on the piece for the forward end. Too much care cannot be given to the making of such a splice. It should be a very good joint and should be well fastened with ½-inch diameter bolts. You can rivet these bolts if you desire, or you can draw them together with nuts. In either case, the heads should be countersunk into the wood at the bottom of the keel and be covered with wood plugs. When the keel is cut to the required shape and carefully finished, you should run a line down the center of the upper side and also mark across same the location of stations.

A piece of oak, 3½ inches thick, about 12 inches wide, and 6 feet in length, will be required for the stem. The shape of the face of same can be taken from the lines, as also the rabbet, but you will have to refer to the construction plan for the shape of the inside. There are numerous ways of transferring the shape to the piece of wood you intend using. Probably the simplest way is to make a paper or wood template, and mark from this direct on one side, then saw and trim to shape. Reverse the template and mark on the opposite side the rabbet line. Run a center line down the face of the stem, and another line ⅜ inches out on either side of this line. This will be the finished width of the face of the stem. With your chisel or some other suitable instrument, cut in the rabbet line you have marked, so as to prevent it from becoming erased as you handle the stick, and then proceed to bevel the sides of the stem from the rabbet line to the line ⅜ inch out on either side of the center line. Finish smooth and true, if you are going to use this bevel as a guide to work out the rabbet. You will also need a fid to show you just how much depth and width is required for the rabbet, and a simple fid can be made as follows: Take a piece of hard wood having a thickness, or an edge, of exactly ⅞ inch, a width of 2 inches, and a length of about 8 inches. To the edge of this piece, and near one end, fasten another piece of wood exactly ⅞ inch square, and about 4 inches in length. This small piece of wood you apply represents the thickness of the planking, and if you will cut the rabbet into the stem



Lines of the 28-footer reproduced to the exact scale of ¼"=1', so that the amateur may easily pick off his points.

so that this small piece fits in the place cut, and the other part of fid sets flush on the beveled side of the stem, you will find that it will give you the required shape of rabbet. Make several cuts at intervals of about 6 inches, and then you can rough out the surplus wood in between, but, before the rabbet is finished, the fid should fit fairly close at any part if laid across the stem in the same direction as the plank meets same. To those who know how to mark on the lines as laid down, the shape of the line representing the intersection of the inside of the plank with the stem, a little time can be saved by doing it. Another point that might help you when you mark off the stem would be to draw the waterlines across same and then you can cut the rabbet to the exact bevel. However, I have found that the average amateur does not cut the rabbet exactly, and, if you are careful when you start to place the battens in position, you will take care that they fit the rabbet in the stem. If they don't fit properly, pare the rabbet until they do fit, but take care not to get it too deep. Otherwise, the side of the stem will stick out beyond the planking, when, as a matter of fact, the plank should stick out a trifle beyond, so as to allow for planing.

You will require an oak, or hackmatack, knee to connect the stem to the keel. If you cannot procure same, you will have to cut it out of a piece of wood, or else build it up of two pieces. It would require a piece 3½ inches thick, 18 inches wide, 4½ feet in length. If cut out of a plank, be sure and have the grain run so as to get the maximum strength, and avoid as much as possible the use of any short-grain material in constructing the framework. Cut this knee to the required shape, mark the rabbet line, and then proceed to bolt it to the stem. Make good, tight joints, and use ½-inch diameter bolts. Bolts and nuts are better for you to use than bolts riveted over washers, as they will, in all probability, draw the joints closer together. If you look carefully at the construction plan, you will note that the joint, as shown, has a small key in the center of the joint. This is a simple method of securing, or locking, such a joint, and it is very efficient. Cut a slot from ½ to ⅝ inches deep, and about 2 inches in length clear through on the stem and knee. Make these slots so that one is about 1/16 inch out of a line with the other, then when you put in the bolts and have drawn them up fairly tight, drive through this slot two pieces of oak that will fit fairly close. They should not bear on either the stem or the knee, but must be very tight in the other direction. When you drive in these wedges, if you have cut the keyway properly, you will find that it will draw the points of the scarf at the top and bottom close together. Then tighten the bolts all they will require. The lower part of the knee can be fitted and secured to the keel in the same manner. Take care, from time to time, to see that the siding of the stem does not get out of line; that is, either tilt back or forward.

The next thing that will require your attention is the shaft log, and, unless you have some particular reason for altering the line of the shaft, I would advise your working to the shaft line on drawing, as this has been specially prepared in order to meet the requirements of a number of well known engines of about the right size for this boat. This log is made up of two pieces of oak, 3½" x 4½". Procure two pieces of stock with a fairly straight grain, 5 feet in length, which will allow enough for squaring the ends. Square the four sides and ends of these two pieces. Then draw a line through the center of one side of each piece. This will bring the line 2¼ inches in from either edge. This line will represent the center of the shaft alley, and, as it is to be 1⅝ inches in diameter, you will require another line parallel to center line on each side 1 1/16 inches out. I would suggest that these lines be cut in with a gauge, as it is much easier to trim to a line that is cut than a pencil mark. On each end, draw a half circle, the radius being 13/16 inch, and then cut away the wood so as to have a half-round groove in one side of each of these pieces. Needless to state, the work would be greatly simplified if you could obtain the use of a circular saw to remove the majority of the wood, and it could then be trimmed with a gouge and round plane. When you feel that it is as near correct as you can make it, clamp the two pieces of wood together, and if you can obtain the use of a bit or twist drill, 1⅝ inches in diameter, run this through the alley, and thus remove any unfair places. Take the two pieces apart and carefully sandpaper the alley. On either side of the shaft alley there should be a space 17/16 inches in width, and in this, a groove about ⅜ inch wide and ½ inch deep is to be cut. If you start the groove ⅜ inch in from the outer edge of either side, you will allow for the bolts to go between the groove and the alley without cutting into either of them. Make up white pine splines that will fit the sides of the groove snugly. Be sure that you do not make the splines much more than ⅞ inch or 15/16 inches deep, for if they strike at the top and bottom of the grooves, you will find it a very difficult matter to draw the two pieces of the shaft log together.

Having completed the log, it is ready for bolting to the keel, unless you want to work it to shape first. If so, you can trim the edge that fits on top of the keel ½ inch on either side, and the same with the topside of the upper half. Work the edges so that it will be rounding in form on the sides. Then put in the splines, running the grooves and the edges that come together with lead paint. Draw together with clamps, place in position on keel, bore carefully and bolt to the keel. Keep the two bolts at the forward end about 5 inches from the end, so that these bolts will not interfere with the fastenings that you may use to secure the stuffing box. Put the next bolt on one side about 8 inches aft of the first one, the one on the opposite side 8 inches aft of that; and so on, marking on the side of the log the general position of these bolts. Use ⅜-inch diameter bolts. These should be cut about 13 inches in length, and good-size heads should be hammered on same before they are driven in. It is possible to procure countersunk head bolts that are well suited for this purpose. Drill the holes 5/16-inch diameter, and then if you taper the ends of the bolts a trifle, you will find that they will drive tight, and draw the shaft log close to the keel. You may wonder why these bolts are not closer, and I will explain by stating that when the horn timber is fastened in place, the bolts for same are alternate with those already driven. Thus, you will readily see the advantage in having the marks showing the location of the bolts, the heads of which would be concealed by the horn timber.

For the horn timber you will need a piece of oak, 3½ inches thick, 11 inches wide, and about 7 feet in length. Cut this to the required shape, run a center line along the upper side and fasten in place, boring for, and driving the bolts in the location aforementioned. If you feel that you don't mind the extra labor entailed, you can bore clear through the horn timber, sides of shaft log and keel, and use bolts and nuts in place of drift bolts. The stern post is to be made of oak, 4½" x 4". The shaft log is 4½" though; therefore, you can readily see that the stern post must be worked to shape with a swell on either side to conform to the shape of the shaft log, keel, etc.

(*To be continued*)

All Dimensions given in Feet Inches, and Eights, and above Base Line 3 Feet below the L.W.L. - All Lines to Outside of Plank

	Stations	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Heights	Raised Sheer	7-9-0	7-7-3	7-5-7	7-4-5	7-3-3	7-2-4	7-1-6	7-1-2	7-0-6						
	Normal "		6-4-0	6-2-1	6-0-2	5-10-3	5-8-7	5-7-3	5-6-3	5-5-3	5-4-6	5-4-1	5-3-7	5-3-7	5-4-1	
	Rabbet		2-5-7	2-0-1	1-11-1	1-10-1	1-9-4	1-9-1	1-9-0	1-9-3	1-10-1	1-11-4	2-1-5	2-4-4	2-8-3	
	Keel Bottom		2-2-1	1-8-7	1-7-6									0-9-3	2-8-1	
	Section 15 Out		7-1-6	3-0-6	2-4-7	2-2-1	2-0-5	1-11-5	1-11-1	1-11-3	1-11-6	2-1-1	2-3-0	2-6-0	2-10-3	
	" 30 "				4-9-0	2-11-1	2-6-1	2-3-6	2-2-5	2-2-4	2-2-7	2-4-0	2-6-0	2-9-6	3-5-2	
Half Breadths	Raised Sheer		1-3-5	2-5-1	3-0-7	3-6-1	3-9-3	3-11-1	3-11-7	4-0-0						
	Normal "		1-0-7	1-11-5	2-8-0	3-2-3	3-6-7	3-9-7	3-11-4	4-0-0	3-11-3	3-9-7	3-7-2	3-3-4	2-10-6	
	W.Line 4A.		0-11-0	1-9-5	2-6-3	3-1-1	3-6-1	3-9-4	3-11-2	3-11-7	3-11-4	3-10-1	3-7-5	3-4-0	2-11-3	
	" " 3A.		0-10-1	1-8-6	2-5-3	3-0-2	3-5-3	3-8-7	3-10-7	3-11-5	3-11-4	3-10-2	3-8-0	3-4-3	2-11-4	
	" " 2A.		0-9-0	1-7-4	2-4-2	2-11-2	3-4-4	3-8-1	3-10-2	3-11-2	3-11-2	3-10-1	3-7-7	3-4-1	2-10-5	
	" " 1A.		0-7-3	1-5-5	2-2-4	2-9-6	3-3-1	3-6-7	3-9-1	3-10-2	3-10-2	3-9-1	3-6-7	3-2-4	2-6-6	
	L.W.L		0-5-0	1-2-2	1-11-0	2-6-4	3-0-2	3-4-2	3-6-6	3-7-6	3-7-6	3-6-5	3-3-6	2-9-6	1-7-5	
	W.Line 1B		0-1-7	0-8-6	1-4-6	2-0-0	2-5-6	2-10-0	3-0-6	3-1-7	3-1-3	2-11-2	2-8-0	1-3-4		
	" " 2B				0-4-2	0-8-4	1-1-1	1-4-7	1-7-2	1-7-2	1-4-1	0-6-3				
Diagonal A.			0-7-4	1-2-6	1-7-4	1-10-2	2-0-1	2-1-1	2-1-6	2-1-6	2-1-1	1-11-5	1-9-2	1-5-5	1-0-2	
" B.			0-9-0	1-6-4	2-2-0	2-7-3	2-11-1	3-1-6	3-3-2	3-3-7	3-3-4	3-2-2	2-11-5	2-7-1	2-0-1	
" C.			0-10-7	1-9-1	2-5-7	3-0-6	3-5-7	3-9-4	3-11-5	4-0-6	4-0-7	3-11-6	3-9-4	3-5-3	2-10-7	

Diagonal A intersects Perpendicular 3'-6" Above Base Line & Base Line 3'-6" Out

" B " " 4'-0" " " " " Water Line 2B 3'-6" "

" C " " 4'-9" " " " " L.W.L. 4'-6" "

Laying-down table for the cruiser, figured to the outside of the planking.

A Motor Lifeboat Cruiser.

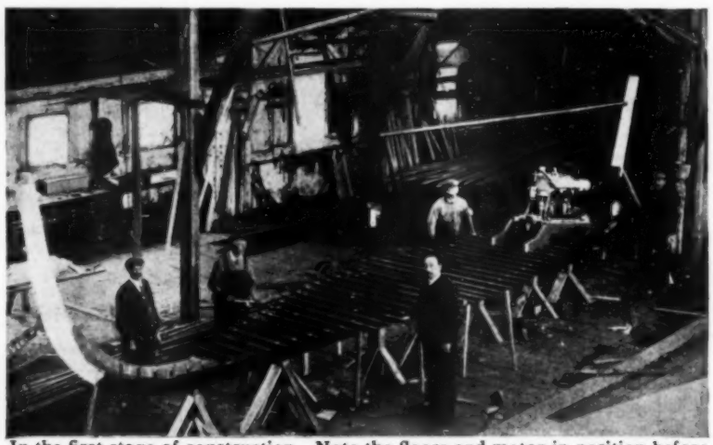
A Thirty-six Footer Designed and Built by The Holmes Motor Company. The Novel Construction Methods and Arrangements All Planned for Safety.

By Geo. S. Hudson.

AN ABSOLUTELY safe boat for commercial or pleasure purposes seems rather a far cry, even in these days of rapid advance in design and installation of power plant. Such a craft, however, has been brought out by the Holmes Motor Company, Inc., of West Mystic, Conn. A more honest boat does not exist than this last word in scientific construction, the culmination of years of painstaking development along conservative lines.

Safety at sea demands a great deal more than the orthodox equipment of passenger - carrying ships — at least, the equipment that, for generations, has been stamped as good enough to cope with emergency arising from collision or destruction of a giant liner by that most dreaded disaster—fire. Time has arrived, however, when travelers scrutinize a ship's lifesaving appliances before reserving accommodations. The seasoned tourist wants to know that his life is to be safeguarded when the crucial moment comes, and the liner's small boats spell either salvation or death.

With knowledge of limitations in steamship equipment, the Holmes Motor Company wrought along lines calculated to revolutionize methods now in vogue. The results achieved have startled the maritime world and marked a new era in transatlantic travel. Shipping magnates agree that the Holmes boat, its unique launching device and the wonderful facility with which a big ship's passengers and crew may be cared for, stands preeminent among devices claimed to minimize perils commonly associated with ocean voyages.



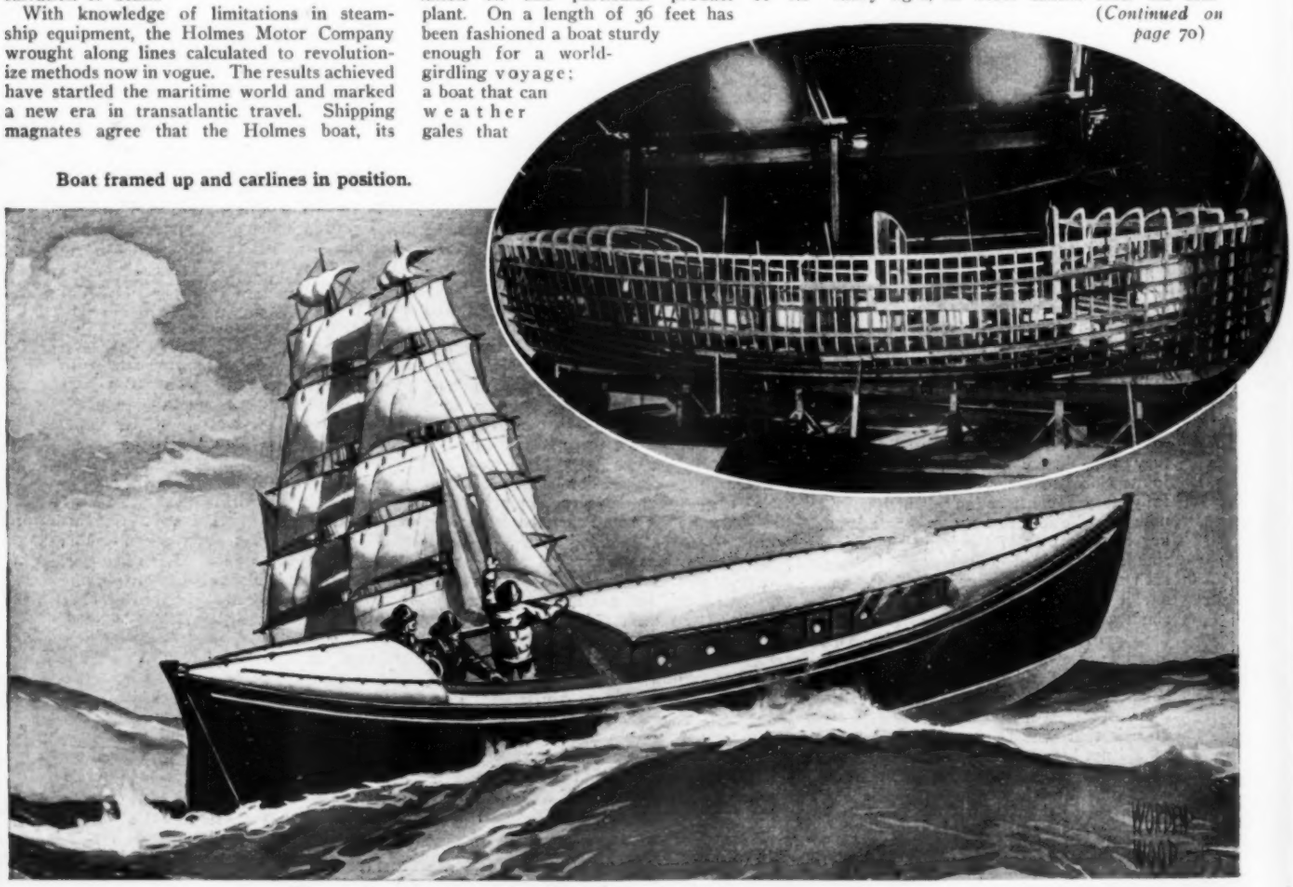
In the first stage of construction. Note the floors and motor in position before framing.

The same motor that has been adopted by the United States Life Saving Service furnished the power equipment of this truly remarkable boat. Everything about the unique craft has been built around safety, and the Holmes Motor Company stakes its reputation on this particular product of its plant. On a length of 36 feet has been fashioned a boat sturdy enough for a world-girdling voyage; a boat that can weather gales that would wrench the stoutest steamship asunder by merciless battering. The great liner labors, weaves, and, unfortunately, floats like a half-tide reef under impact of watery mountains. The Holmes 36-footer, under like conditions of wind and sea, should ride combers like a chip — dry, buoyant and intact.

Unlike other lifeboats that have proved practicable, the Holmes boat has a cabin that affords shelter, warmth and light for those forced to flee a foundering ship. Ample ventilation is provided; space is arranged for supply of food and water. In this lifeboat is embodied a yacht's interior, sharp contrast from the regulation lifeboat cumbering the liner's decks, with no provision for shelter from killing cold, and the exhaustion incident to battling boarding seas that continually threaten, and, alas, too frequently capsize the frail, open affair, and hurl its occupants to death.

The motor in the Holmes lifeboat is in a separate compartment in the stern of the boat, entirely apart from, and having no connection with, either cabin or cockpit. This arrangement eliminates noise, odors and vibration. Danger of fire is nil because the motor compartment is cemented to the floor-line and drained from a well that is pumped automatically by the motor. The sides of this compartment are lined with metal, and the compartment is absolutely tight, as water cannot enter the com-

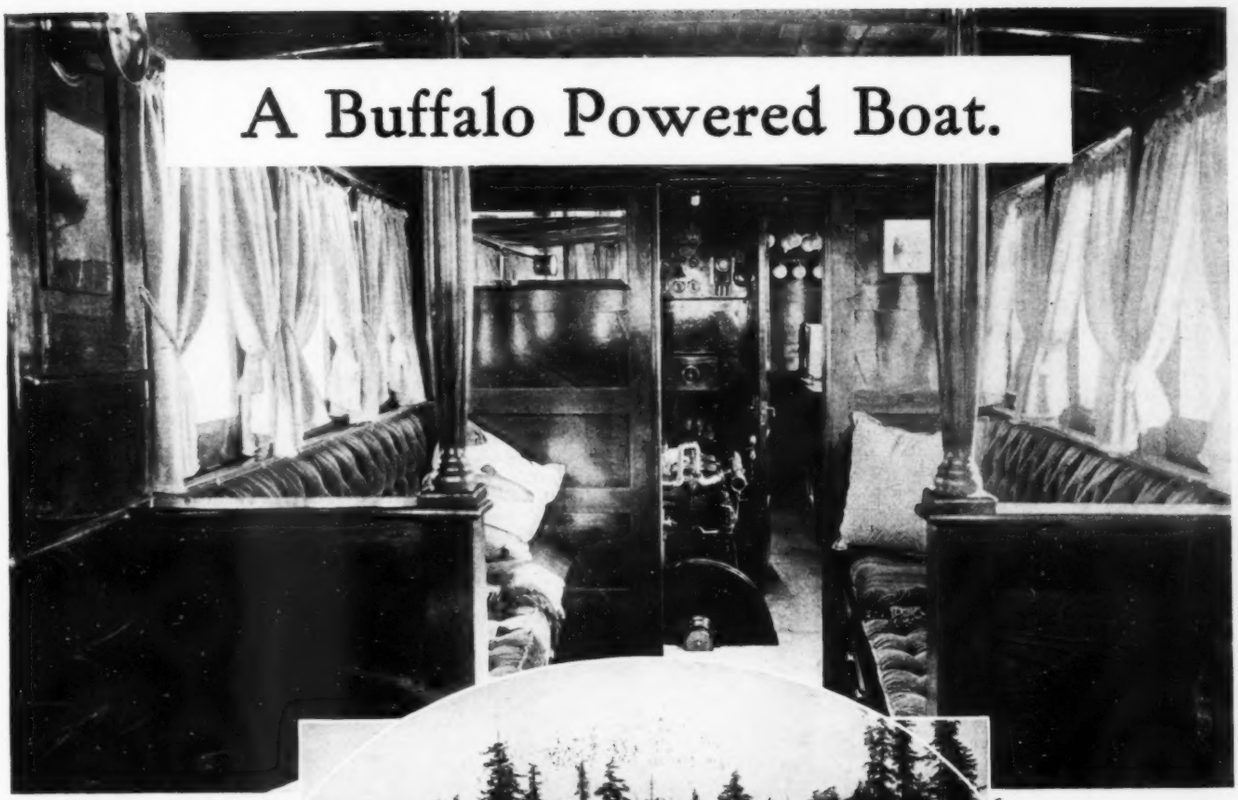
(*Continued on page 70*)



Boat framed up and carlines in position.

The 36-foot Holmes cruiser life boat with a Holmes get-at-able motor.

A Buffalo Powered Boat.



The cabin and engine-room.

THE illustrations on this page are of Nadine, owned by Mr. F. Lincoln, of Chicago, Ill., and is his fourth boat which he has powered with Buffalo motors, which speaks a great deal for this particular make. Nadine, is of the glass-cabin type, 53 feet in length, has a beam of 9½ feet, and is powered with a 26-30-h.p., four-cylinder, four-cycle, Buffalo motor. The hull was built by Mark Johnson, of Seattle.

Nadine under way.

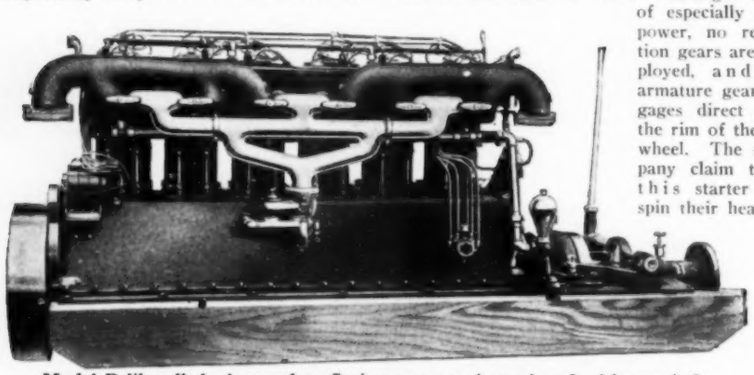
Looking forward in Nadine's cabin.

MARINE MOTORS

Scripps Motors in 1914.

Seventeen Engines in a Comprehensive Line Which Covers Practically Every Service. Exceptional Completeness of Equipment a Feature of the Extremely Heavy Duty Models.

THE new year sees a number of refinements in the existing 17 models of the Scripps line of engines manufactured by the Scripps Motor Company, of Detroit, Mich., although there have been no additions to this exceptionally complete line. The water manifolds have been changed somewhat so that the number of joints has been reduced one-half, and extra precautions have been taken to prevent the escape of oil from crankcase, reverse gear and other parts. Provision has been made on all four and six-cylinder models for the installation of an electric starter. The starter used is of Rushmore manufacture, with floating armature which automatically meshes the gears when the current is switched on. As the starting motor is of especially high power, no reduction gears are employed, and the armature gear engages direct with the rim of the flywheel. The company claim that this starter will spin their heaviest motor 200 r.p.m., even with the throttle wide open. A silent chain drives directly from the crankshaft a Rushmore, 6-volt, variable-speed generator which generates current for starting.



Model D like all the heavy duty Scripps motors is equipped with two independent ignition systems firing three sparks in each cylinder.

The Scripps engines are divided into three classes, namely, extreme heavy-duty, medium-duty and semi-speed models. Of the semi-speed engines, which are very substantial in construction and equal in durability to some of the slower, heavier models, there are five sizes. These are, two, four and six-cylinder machines, rated respectively at 13, 30, and 45 h.p., and a four and a six developing 48 and 72 h.p.

There are seven models in the medium duty size, ranging from a single-cylinder, 4½-6 h.p., to a six-cylinder, 48 h.p. The extremely heavy-duty are in two, four and six-cylinder models, with bore and stroke of 7½" x 9", with a power rating of 24-32, 49-64, and 73-96 b.h.p., respectively. In these engines the manufacturers have endeavored to make the most completely equipped heavy-duty motors on the market, the regular equipment including a positively-driven bilge pump, a high-power air compressor, and two independent systems of ignition, consisting of a Bosch type ZR waterproof two-spark magneto, and a Delco single-spark battery system. There are three spark plugs in each cylinder, and one of these is fired by the Delco system, while the other two, in extreme points of the combustion space, are simultaneously fired by the Bosch system.

The remaining model in this extensive line is the Scripps Midget, a four-cylinder, 7 h.p. unit motor for use in the best yacht tenders.

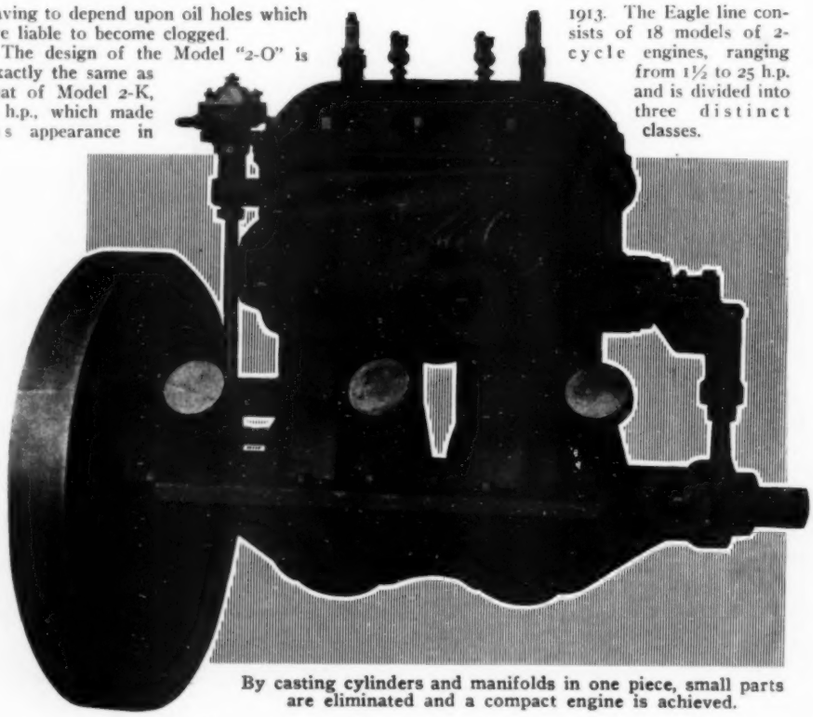
A New Two-Cylinder Eagle.

Having Cylinders, Intake and Exhaust Manifolds and Upper Crankcase Cast in One Piece. Unusual Construction of Connecting Rods Facilitates Lubrication of Bearings.

THE Standard Company, of Torrington, Conn., manufacturers of Eagle engines, have brought out a new high-speed model for 1914, known as Model "2-O," which is a 3-port, 2-cylinder, en bloc machine, with 4½" bore and 4" stroke, developing 12 h.p. at 800 r.p.m., and weighing but 250 lbs. In order to eliminate as many small parts as possible, both cylinders, intake and exhaust manifolds, and upper crankcase are made in one casting. Besides making a very compact and neat engine, this construction also obviates the use of several gaskets.

Lubrication is by grease from compression grease cups on main bearings, and by oil in gasoline for piston, piston pin and connecting the rod bearings. A feature of special interest is the construction of the connecting rod. Instead of the conventional split bushing for the crank-pin bearing, only a half bushing is used, and this is fitted to the lower end of the connecting rod. As all the wear comes on the part of the bushing which bears the downward thrust of the piston, only a half bushing is required, while the hinged, bronze connecting rod cap forms the other half of bearing. Since the only function of the cap is to keep the connecting rod on the crank-pin when starting and reversing, this part is subjected to practically no strain. Taking advantage of this fact, the cap is made but half the length of the crank-pin, leaving a portion of the crank-pin exposed on either side of the cap. With the method of lubrication employed, this bearing is always perfectly oiled, inasmuch as the oil is deposited directly on the crank-pin, without having to depend upon oil holes which are liable to become clogged.

The design of the Model "2-O" is exactly the same as that of Model 2-K, 7 h.p., which made its appearance in 1913. The Eagle line consists of 18 models of 2-cycle engines, ranging from 1½ to 25 h.p. and is divided into three distinct classes.



By casting cylinders and manifolds in one piece, small parts are eliminated and a compact engine is achieved.

Kahlenberg Heavy Oil Motors.

Known as Semi-Diesels, but Started by Gasoline Without the Use of Torches or Hot Bulbs. Heavy Oil Fuel Handled by Hollow Shaft and Injection Pump for Each Cylinder.

MARINE motor builders have faced a serious problem in the production of an engine to operate successfully on the heavier fuels, such as gas oil, kerosene, solar oil and similar fuels. Hence much interest has been shown in the recent announcement of a motor of this kind from Kahlenberg Bros. Company, of Two Rivers, Wis.

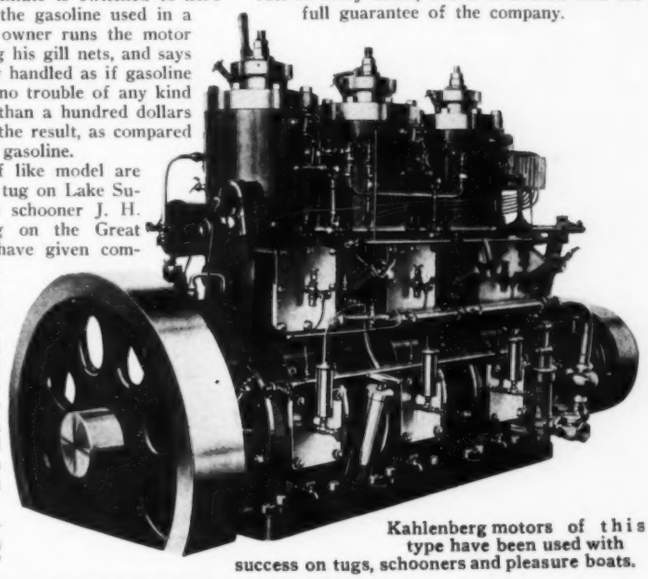
This is a 75-85 h.p., three-cylinder, two-cycle, 9-inch bore, 10-inch stroke motor. It is started on gasoline in the usual way, and run for a minute or two. Then the gasoline is shut off, and the motor begins at once to operate on kerosene or similar fuel. The fuel is injected directly into the combustion chamber, when the piston is near the top of its stroke. When the motor is using kerosene, only pure air is taken into the base and on this class of fuel the consumption is said to be less than one-tenth gallon per horsepower hour.

Fuel is handled by means of a hollow lay-shaft on the side of the motor operated from the rear by eccentrics. This gives individual motion to the injection pumps, of which there is one for each cylinder. A single lever controls the stroke of these pumps for speed regulation.

The advantages claimed for this motor are instant starting without heating arrangement, such as torches or hot bulbs, and that the motor may be used as an ordinary gasoline motor if desired. A motor of this type has been in service at Two Rivers since April, 1913, in a fishboat that must encounter all kinds of weather, running 10 to 12 hours every day. This motor is started on gasoline, and after it has run about a minute is switched to kerosene. This is all the gasoline used in a day's work. The owner runs the motor slowly while lifting his gill nets, and says it is just as readily handled as if gasoline were used. With no trouble of any kind a saving of more than a hundred dollars a month has been the result, as compared with operating on gasoline.

Other motors of like model are in use in a fishing tug on Lake Superior, and in the schooner J. H. Stevens, operating on the Great Lakes, and both have given complete satisfaction. The cruiser Roboco, built by the Racine Boat Company, is equipped with this type Kahlenberg motor. She is now in Florida, after a busy season, and the motor has given perfect results.

The new Kahlenberg type, known as a "semi-Diesel," was placed on the market only after thorough trial. The service it gave in boats of various types has convinced the builders that it is correct in every detail, and it is offered with the full guarantee of the company.

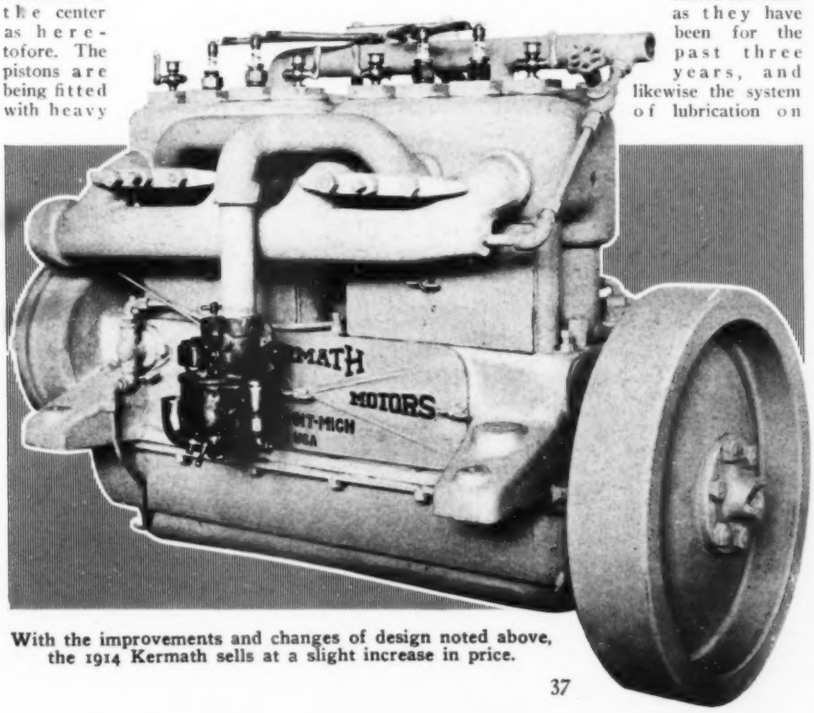


Kahlenberg motors of this type have been used with success on tugs, schooners and pleasure boats.

The 1914 Kermath.

Several New Features, Including a Hand Hole Plate to Open Up the Entire Side of the Motor. A 12 h.p. Motor in Which a Good Deal of Thought Has Been Devoted to Lubrication.

WITH the many detail improvements which the Kermath Manufacturing Company, Detroit, Mich., announce with the 1914 model, it is probable that their business will be greater than ever. The engine crankcase has been re-designed so that a fine, big hand-hole plate, 16½" long and 4½" wide, opens up the entire side of the motor, and a very much smaller hard bronze oil pump has been placed at the back end of the crankcase, instead of at the center as heretofore. The pistons are being fitted with heavy bronze bushings on both sides to receive the piston pins, and the bottom of the connecting rods are fitted with dippers instead of having the entire rod dip into the oil as previously, while the oil pan has undergone some changes, inasmuch as the lower pan forms a reservoir, and the sub-pan will contain the dipper pockets from which each one of the connecting rods will receive its lubrication. The large oil wells over each one of the main bearings are retained the same as they have been for the past three years, and likewise the system of lubrication on the timing gears. The changes noted are in the nature of refinements. The general construction of this engine has not been changed, and the Kermath Company goes into its fourth year announcing a one-policy model for 1914, and, with the changes noted, a slight increase in price.



With the improvements and changes of design noted above, the 1914 Kermath sells at a slight increase in price.

Arrangements have been made with the Paragon Gear Company to furnish a special Kermath-Paragon gear, in which the rear support will be the same width as the Kermath engine arms, so that the entire equipment may be put on one engine base. With the Paragon outfit will be furnished a forward and reverse thrust bearing, propeller stub shaft, and rear coupling complete.

The other reverse equipment listed with this engine will be the Gies enclosed type gear, which will also be furnished complete with both sets of couplings. The Kingston dual magneto has been adopted as regular equipment on the outfit "B." The Duplex coils will be furnished on the outfit "C," and the Bosch dual magneto will be furnished on the outfit "E." Altogether, the Kermath motor carries one of the best lines of equipment it is possible to buy, being high-grade in every respect like the motor itself.

An innovation in this company's line is a 2-cylinder special yacht tender, 4-cycle motor of 5 to 6 h.p., with 3½" bore and 4" stroke. The cylinders are finished in gray enamel; the water manifolds and valve plugs are all of polished brass, and the fly-wheel is finished and polished all over and heavily brass-plated. The crankcase and oil pan are entirely of polished aluminum. The company state that it is a very beautiful outfit in every way, and in keeping throughout with the finish of the finest yacht. It is strictly special with them and built only on order. The outfit is fitted with an 18-pound Joe's reverse gear, and the whole outfit, complete with reverse gear, weighs approximately 190 pounds.

Devices & Stunts

[This department is being conducted as a regular feature of MoToR BoatinG, *and we ask our readers to send us photographs or sketches, preferably photographs, with descriptions (of no more than three or four hundred words) of unique devices for or improvements in their boats which they have made themselves or had made for them. We will pay $5.00 each for all items of this kind with the accompanying photographs or sketches which we use. The more who send in material the better we shall like it, and the better the department will be.—*THE EDITOR.]

Keeping the Tiller Line Tight.

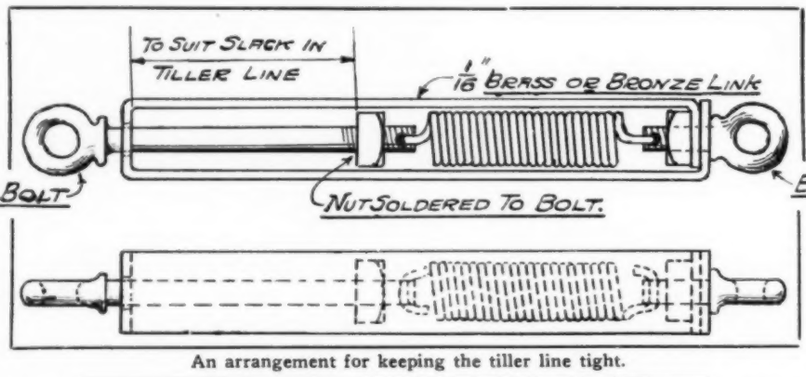
A Device Which by Means of a Spring Automatically Overcomes This Usual and Troublesome Condition. An Easy Method of Compensating for the Shrinking and Stretching of Cotton Lines.

By W. E. Motz.

DURING the first year of the career of Edna M., the writer experienced difficulty in keeping the tiller lines "fair" on the steering-wheel drum. This is a common occurrence on boats not equipped with the more satisfactory quadrant tiller, and is caused by the slack which occurs on the off side of the drum when the tiller moves to either side of its central position. As the tiller was located above deck, the substitution of a quadrant for the straight tiller was not advisable, because of valuable deck space utilized and unsightliness.

Accordingly, the take-up shown in the drawing was devised, and inserted in each side of the tiller lines, close to the steering-wheel. The device consists of two small brass or bronze eye-bolts, a link of brass or bronze bent up as per sketch and a brass spring. Steel or iron may be used instead, but are not quite so satisfactory, owing to the tendency to rust. The eye-bolts move easily in holes in the link and are drilled at the inner end to take the spring.

In installing, the tension on the tiller lines should be adjusted so that the take-ups will be pulled to their fullest extension when the tiller is in its central position. In this condition, the tension is transmitted through the link, and not the spring. In turning the steering-wheel, the slack which occurs on the off side of the drum is immediately taken up by the spring on that side, and a nice, even tension is maintained. The arrangement has proven its worth in over three years of service, and is well worth the small trouble in making. In fact, it is apt to pay for itself the first time one gets in a tight place, for without it, it is in the tight place most frequently that the tiller line jams, but with it it cannot jam.



An arrangement for keeping the tiller line tight.

Replacing Broken Valve Stems.

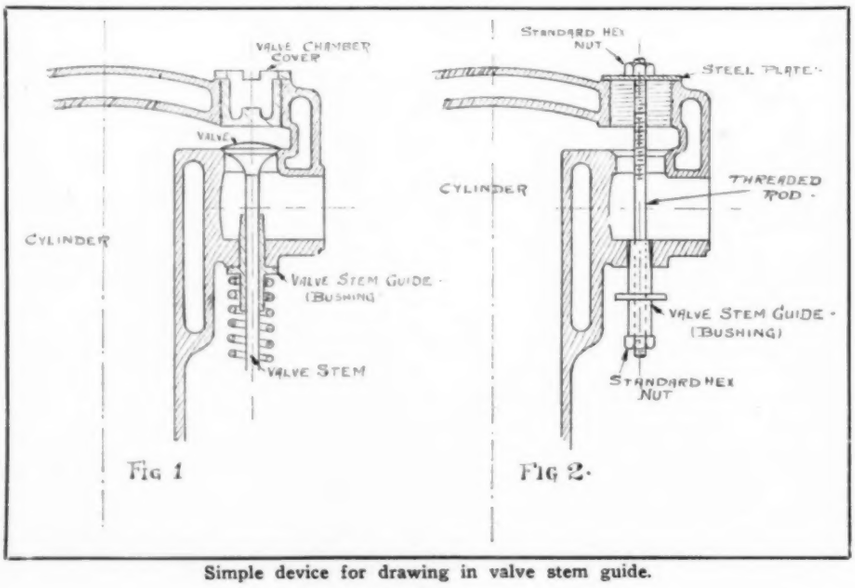
A Simple Arrangement Which Will Assure Absolute Alignment of the Valve Stem Guides. Apparatus Which May Be Used on Many Types of Four-Cycle Motors.

By C. E. Bradley.

AN IMPORTANT detail of refinement found in many of our up-to-date, well-designed marine motors of the four-cycle type is the removable valve stem guide. A former method of construction was to cast and machine the guides integral with the cylinder. This was somewhat cheaper in the first cost than the present-day method of building the cylinders with the guides as a separate fitting or bushing. Valve stems and guides, however, like all other moving parts of the motor, are subject to wear, and guides, as part of the cylinder casting proper when worn, were either reamed out to a slightly increased size and fitted with valves having larger diameter stems to fit these trued up holes, or drilled out to a larger size and bushed with a thin steel or brass tube. These methods of remedying, at their best, were but a makeshift job, as is evident it would be impossible to do either very many times, hence continued trouble, if on the inlet side, due to leakage of air between the side of the worn hole, and the valve stem thereby diluting the mixture entering the combustion chamber.

Marine engine manufacturers now supply these guide bushings as an interchangeable part (see Fig. 1 in sketch), a force fit to a true (tapered or straight) hole machined in the valve chamber casting. When a bushing becomes worn it is a simple matter to knock it out of place, yet it seems somewhat of a job to replace the new part. True, it might be hammered back in place, but there is always the possi-

(*Con. on page* 66)



Simple device for drawing in valve stem guide.

From Motor Boating Readers

A Department for the Exchange of Ideas and the Discussion of Questions of General Interest. Editorial Opinion on a Number of Questions Submitted by Readers of the Magazine.

MoToR BoatinG's *columns are open to its readers, not only for asking questions, but for placing before them other readers' ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letters and answers where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through the correspondence department, readers of the magazine may be of direct aid to one another in solving the problems of motor boating.*

More Speed Impossible.

To the Editor of MoToR BoatinG, *Sir:*

I have read with interest your various issues of MoToR BoatinG for the past 18 months. You have helped others, would you kindly help me also?

I am the owner of an 18′ compromise stern boat, 54″ beam, 18″ draught. The freeboard at bow is 24″ or so, and the general lines are very good. The engine is a 2 cylinder one, rated at 4 h.p. at 900 r.p.m. We have a 12″ two blade, reversible propeller at present, which drives the boat at about 7 miles per hour without labor. Engine runs like a sewing machine—in fact, it can hardly be heard running 25 feet distant.

From the semi-speed lines of the boat, and the fact that the engine runs so smoothly, I am under the impression (together with others), that boat with present engine ought to give more speed.

What in your opinion should be the pitch and diameter of a propeller to give a speed of 9 or 10 miles per hour (if it can be obtained).

The make of same, whether 2 or 3 blade. If I can get more speed by taking out reverse gear, I will do so. What speed is possible finally, with this boat and engine? If you should recommend a different diameter and pitch, could you not recommend one that would thrust boat forward, pushing up stern slightly instead of drawing down?

The engine is situated about three-quarters or five-eighths of the distance from the bow, thereby very slightly settling stern downward.

Dimensions are 4½ ft. forward deck, 10 ft. cockpit, 3½ ft. rear deck, 18 ft. 3 in. over all. Engine is situated about 13 feet from bow stem.

If you will kindly answer above questions in your "Questions and Answers" column (whether for or against), I will be under many obligations.

W. C. H., Brockton, Mass.

[We believe you are obtaining very good results with this type of boat, which is not suited to much greater speed than you are obtaining.

We are familiar with this particular type of hull, and believe yours is a good average speed, and we would not recommend any changes, unless you wish to change everything around and install a new motor, etc.

Probably your propeller may be a little more inefficient than one we would recommend, yet the loss is so slight that to gain this additional increase in speed the change would hardly be justified.

There is nothing you can do easily to prevent the squatting of this boat at the stern. It is typical of this type of hull and cannot be remedied with any degree of satisfaction.

Your question as to the proper wheel for a speed of 9 or 10 miles an hour is, of course, impossible to answer, as it would take about three times the power which you now have to give you the latter speed; then your boat would trim so, that it would not be a practical proposition.]

Variation of the Compass.

To the Editor of MoToR BoatinG, *Sir:*

I would like to thank you for the help that you have given in answering my previous question. But at the same time I will admit that I am still going to bother you for another answer.

A few days ago I overheard a heated argument between two men who are supposed to be pretty well acquainted with motor boats. The argument I will fully explain in my question.

Does a compass always point north no matter what part of the world you may be using it; if not, why not?

Does a compass change its direction when crossing the equator? If so, in what direction does it change?

A. E. B., Detroit, Mich.

[The compass seldom, if ever, points in a truly northerly direction. Of course, you understand there are really two norths, one of which is called the true north, and is the theoretical end of the earth's axis, and the other is called the magnetic north. It is toward the latter pole that the compass is supposed to point in the northern hemisphere. In the southern hemisphere the south pole of the compass points in the general direction of the south magnetic pole, and there is no change in the direction of the compass needle as the equator is passed.

By reason of the fact that the magnetic pole differs in position from the geographical pole, the compass needle will not indicate true directions, but each compass point will differ from the corresponding true point by an amount depending upon the angle between the geographical and magnetic pole at the position of the observer. This difference or error is called variation of the compass. The variation not only changes as one travels from point to point on the earth, being different in different localities, but as it has been found that the earth's magnetic poles are in constant motion, it undergoes certain changes from year to year.

In addition to the variation, the compass ordinarily has a still further error in its indications, which arises from the effect exerted upon it by the masses of magnetic metal within the ship itself. This error is known as the deviation of the compass.]

Power Gradually Diminishes.

To the Editor of MoToR BoatinG, *Sir:*

I would like to have your valuable advice on the following queries:

I have a 27′ hunting cabin cruiser with 8′ beam, converted, as I am told, from a Barnegat Bay surf boat. As far as I can ascertain (not having seen the boat out of water), the underbody sections are very flat, while the stern has a false piece tagged on to make a better after deck. She rolls considerably in a seaway in a very annoying manner. Is her shallow underbody responsible for this, and can it be avoided in any way? She makes a sort of roaring noise at the stern occasionally as though sucking down air. The motor is a single cylinder, 2 cycle, 2 port, with a fixed make and break spark and is 5¼″ bore by 6″ stroke, and runs 400 to 500 revolutions. The present propeller is a three blade wheel, 18″ diameter, pitch unknown, having broad blades with rounded tips. I have another wheel which was originally on the boat, 22″ diameter with straight edge blades and square tips, which the former owner says gave much better speed than the one at present installed. My speed at present is 6¾ miles per hour, with tide, in the Delaware, which I estimate runs at least two miles per hour. What size wheel do you suggest to improve the speed? The motor is equipped with what I take to be an old time large cast brass generator valve, having a very thin copper pipe connection with gas tank. When the motor is started, it will run with throttle one-half open for about fifteen minutes and then gradually slow down. Upon closing throttle a notch or two it picks up again for a few minutes longer, then repeats former antics, till clutch has to be pulled out to prevent stalling. It will then give a peculiar cough at generator and start right in with full power as before for another 15 minutes. Is this lack of gas because of small capacity of pipe? What size copper pipe should be used? To equip this motor with a carburetor, what size carburetor would be required? The generator valve is cast integral with the base plate of motor and is fastened with six studs. I would have to have another plate cast with hole of right size tapped for check valve and carburetor.

I realize I have been unable to give you sufficient data about boat, etc., for accurate statements on your part, but I hope you will be able to give me a rough estimate about propeller. Would also ask what h.p. you think motor develops?

W. C., Philadelphia, Pa.

[The average speed of only 5½ miles an hour with your 27′ cruiser, equipped with a single-cylinder, two-cycle motor 5⅛″ x 6″, does seem very slow indeed. If this motor is in good condition and of good design it should readily develop about 7 h.p. at 450 or 500 revolutions per minute. This, it seems, should give you an average speed of at least 7 miles an hour without any difficulty.

We believe your wheel is somewhat too small, and if your boat were equipped with one having 3 blades, 20″ in diameter, and 24″ pitch, which, if turned at 400 revolutions per minute, should give you considerably better speed than you are getting at the present time.

It is not an uncommon occurrence to have a boat of your type roll considerably in a seaway, and this cannot be corrected to any appreciable extent. The addition of ballast might help to some extent, but the proper location for this can only be determined by a little experimenting. Some people claim that the addition of bilge keels will help a boat of this character somewhat, but it never has been our experience to note very much improvement in this respect.

We believe you have one of the old time vaporizers or generating valves on your engine, which were so delicate in their adjustment that they often produced just the kind of results which you write us about, although it may be that your copper feed pipe is slightly too small, or that the level of your tank is not raised high enough above the vaporizer to produce a constant gasoline pressure at all times, and thus give a steady flow of gasoline to the motor. If there is not much difference of level between the vaporizer and the tank, the delicate adjustment of the old time vaporizer would produce just such an experience as you are having.

The gradual slowing down is caused by too much gasoline, which you correctly rectify by closing up the needle valve a trifle, but this evidently cuts the supply off too much and causes back-firing which results in a very insufficient supply of fuel. A 1″ carbureter replacing the vaporizer should correct this fault if the tank is high enough. We do not think it should be necessary to have a new base plate cast, as a hole for the new carbureter lead could be bored and tapped out in the present base plate. If your engine happens to be one which has a base plate on each side, as many of them have, it might be well to tap out the plate on the opposite side from the one now used by the vaporizer. In this way you can still leave your engine equipped with its present vaporizer and have a new carbureter on the opposite side. Sometimes very good results can be obtained in this manner by using either the carbureter or the vaporizer, or both at the same time, for certain results of the boat and engine.]

A Trip to Florida.

To the Editor of MoToR BoatinG, *Sir:*

I expect to make a trip to Florida via the inland route in the near future and would appreciate any information in reference to same.

No doubt you have published articles about this trip, but as I am away from home a great deal the magazine failed to reach me.

In the July number you issued a chart of the Hudson. Have you a similar one of the Florida trip?

My captain is acquainted with the journey as far as Norfolk, beyond that he does not know.

E. J. M., Philadelphia, Pa.

[We have no chart similar to ours of the Hudson River. However, in our October, 1913, issue we published an article on this subject, giving many points of interest, such as gasoline stations, points of supply, etc., which should prove of value to you.

We would suggest that you obtain from the Department of Coast and Geodetic Supply, Washington, D. C., a copy of their Inside Route Pilot, New York to Key West, which sells for the sum of 30 cents.

We would also suggest that you correspond with Lieut. W. C. Stiles, of Norfolk, Va., who has considerable information about this route, and has written us that he would like to correspond with yachtsmen desirous of making this trip with the idea of giving them the benefit of his experience on these waters.]

Power for Maximum Speed.

To the Editor of MoToR BoatinG, *Sir:*

Although not on your subscription list, I am a constant reader of your excellent publication, and by virtue of this fact will presume to solicit your advice.

Have built from my own designs, or rather according to my own ideas, a 12′ hydroplane hull, with a beam 3′ 6″, and depth amidships of 20″, the frame is of oak, and the planking is ½″ cypress, except decks, which are ¼″ of same material. This hull has a slight "step" considerably aft of amidships, and is constructed with air chambers fore and aft, taking up half its length. There are other features, but I will not disclose them at this writing. However, should this experiment prove successful, will favor you with photo and details later, if desired.

I desire maximum speed, and ask your opinion as to power plant, number of revolutions, size and pitch of propeller, the limit of weight for power plant, and speed you would expect, assuming, of course, that the hull is properly designed and constructed. Should you recommend a reversible wheel for boat of this type—if not, why not?

O. E. L., Burlington, Iowa.

[Of course, you realize that we have not seen this boat or her lines, and have not enough information about her to advise you exactly in many respects. However, we would suggest an engine weighing not over 250 lbs., either two or three-cylinder, and probably of a 2-cycle type. This motor should not weigh over 15 lbs. per horsepower. The revolutions should be somewhere between 900 and 1,200 per minute. A 20-horsepower motor having these characteristics should give you a speed of over 20 miles an hour.

We cannot advise you as to the proper diameter and pitch of the propeller, without knowing which one you decide upon, as these all depend upon the power and revolutions of the motor chosen. If you will give us this data, we will be pleased to advise you as to the proper wheel.

As to whether you equip your boat with a reversible wheel or not is a matter of personal preference, and we are not in a position to advise one way or another on this point.]

What Is a Hydroplane?

To the Editor of MoToR BoatinG, *Sir:*

Will you kindly tell me what the picture on the enclosed clipping is called and what a hydroplane is?

I had an argument as to whether this is called a hydroplane or not. I said it was a hydroplane, and the other party said it was just called a motor boat.

L. F. G., Chicago, Ill.

[This type of boat is known as the hydroplane. This particular boat happens to be "Baby Reliance," a 20-footer, with 180-h.p., 8-cylinder Sterling Motor, which has won many races during the past summer, being capable of about 45 miles an hour.

Just what a hydroplane is, is hard to put into words. Strictly speaking, any boat which "planes" is a hydroplane. How to determine whether she planes or does not plane is another question. In a fast displacement boat when she gets up a speed, the bow usually rises and the stern settles. But in a hydroplane, the first step is in the bow rising, then the stern comes up, and the bow drops to a lower level, and the whole boat skips along on the surface of the water, so to speak.

The definition of a hydroplane as given by the American Power Boat Association is as follows:

"A hydroplane is a boat whose propeller acts in or against the water, and which has one or more of the following characteristics, viz.: (*A*) One or more breaks in the longitudinal continuity of the immersed surface, or an underbody having one or more lifting surfaces. (*B*) An area of immersed transom exceeding 50% of the immersed midship section area. (*C*) A rating of more than 17 times the square root of the load waterline length."]

Small Motor in a Cruiser.

To the Editor of MoToR BoatinG, *Sir:*

Although I have just subscribed for MoToR BoatinG, I have been a constant reader for some time and notice that you are willing to offer suggestions and answer the questions of your readers.

I have just purchased a marine type motor, 4 cylinder, 4 cycle, 3¾ x 3½; it had formerly been used in a 30′ cruiser, and the owner claimed that it turned a 19-inch blade, pitch 17″ or 16″ at 900 revolutions, and that he acquired a speed of a little better than 9 miles, the number of blades was not mentioned.

As this motor is not manufactured at this time, I am rather at a loss where to look for information, so thought you might be able to help me out.

I am laying the keel for a 32-foot bridge deck cruiser and want to put this motor in her; can you give me some idea of the diameter and pitch, number of blades, etc., that this motor will successfully turn over and the number of miles per hour she should drive a boat of this size?

The boat itself will draw between 30 and 35 inches of water and the bow will not be too blunt, although she is a good sea boat and not built for speed, but comfort.

The nearest model of this boat will be found on page 22 of the October number of MoToR BoatinG. I should have mentioned that this motor is rated at 16-20 h.p.

F. H. H., Watertown, Mass.

[While we are not personally acquainted with this motor, yet we are inclined to doubt the feasibility of using a motor of this type and size in a heavy cruiser. A speed of 8 miles an hour in a boat of this type is very good indeed, and if the engine is able to turn a 19″ diameter propeller 900 revolutions a minute you certainly have obtained a fine engine. The average motor of these dimensions should develop in the neighborhood of 14 h.p., and we have never heard of a motor of this power being able to turn a wheel of this size anything like 900 r.p.m.

However, if you are certain that you are getting what the former owner claims for his motor, we would suggest for the best efficiency a wheel 17″ in diameter by 16″ pitch, which, we believe, a motor of these dimensions should be able to turn at a speed of about 800 r.p.m., and should give you a speed of approximately 8 miles per hour. You will see that we are suggesting a wheel considerably smaller in both diameter and pitch than the former wheel was, and still keeping it down to a lower r.p.m.]

Capt. Crouch, of Milwaukee, Wis., getting points from the designs in the Buyers' Reference and Export Number of Motor Boating.

Various Kinds of Fastenings.

To the Editor of MoToR BoatinG, *Sir:*

As I am a reader of your valuable magazine, I would like to ask a few questions. What is the best way to fasten the planking of a boat of a V-bottom type, frames 1¼ x 2½? Which are the best between nails and screws and why? I want to use galvanized fastenings, as they are much cheaper than brass.

B. S., Aurora, Ill.

[We do not believe there is such a thing as a "best method." Everything depends upon the manner in which the work is done, and the service to which the boat is to be put. For fresh water service, such as we judge you intend to sail upon, we can see no great advantage of copper fastenings over galvanized iron, yet for salt water work this statement might not be absolutely true. Brass screws are used in many cases and give entirely satisfactory results, but, of course, the labor and cost are greater than with galvanized fastenings, and it is simply a question which the user must settle for himself whether the service from the latter, with the additional cost, is enough to give them preference over the galvanized fastenings. Many boat owners claim that if screws are used in fast speed boats, with high-powered engines, which are subject to a considerable amount of vibration, that the screws tend to work loose in time. However, advocates of the brass screw system of fastening claim that this seldom, if ever, happens. From the above you will see that any of those methods mentioned are satisfactory, if the work is properly and carefully done.]

Motor and Propeller Outfit.

To the Editor of MoToR BoatinG, *Sir:*

Will you kindly give me your opinion about the following:

1. Would you advise a two or three cylinder, 6 h.p. motor (two cycle) for installation in a twenty-foot, V-bottom boat of medium weight?

2. Are the advantages claimed for the four cycle, six cylinder motors present in the two cycle, three cylinder? The advantages I am thinking of are those of lack of vibration, and general smoothness in their vibration. No dead center, etc.

3. What propeller is suitable for an 18-foot runabout with a single cylinder, 6 h.p. motor? The propeller now in use allows the motor to race and is undoubtedly too small. I believe the motor should turn about 400.

4. What propeller for 19½-foot, V-bottom runabout and 15 h.p. motor, 3 cylinder, turning about 1,200?

E. C., Plattsburg Barracks, N. Y.

[We cannot advise you as to which is better, a 2 or 3-cylinder motor for installation in a 20′ V-bottom boat. Either of the two types will work out very well indeed, and the choice is more a matter of personal preference than anything else, provided a motor of the correct weight and revolutions per minute is chosen.

A 3-cylinder, 2-cycle motor should be as well balanced as a 4-cycle, 6-cylinder type is.

The proper propeller for an 18′ runabout with a 6-h.p. motor, which develops its power at 400 revolutions, would be one having three blades, 19″ in diameter by 30″ pitch. Of course, you realize we are taking your word for the statement that your motor will deliver this power at 400 revolutions per minute, but you have given us no data to allow us to make sure of this fact ourselves. Also you have not given us any data about the boat; we must base the above statement on the average open boat of this length.

For the average 19½′ V-bottom boat, equipped with a 15-h.p. motor, which develops its power at 1,200 r.p.m., the proper wheel would be one having three blades, 14″ in diameter by 16½″ pitch.]

Clutch Slipping.

To the Editor of MoToR BoatinG, *Sir:*

I wish to acquire some information and I am afraid I cannot give you enough data to enable you to answer intelligently. However, my boat is 26 feet long, 5 feet beam, ordinary type runabout with flat after section, ¾″ planking, oak decks and trim, engine under oak hatch, making boat a fairly heavy type. Engine is Auto type, 40 h.p. (in car), 4½″ bore by, I presume, 5″ or 5½″ stroke, dual duplex, etc. Boat makes about 15 miles per hour, and swings a 20-3 blade, 28 pitch. The clutch slips. Do you think clutch, which is strictly for auto usage, is not strong enough, or is wheel in your estimation too large or pitch too great? Could you suggest a wheel?

I might add the power is transmitted through a universal at, I think, not more than 5 or 7 degrees. Could you also say what would be the most economical speed of engine?

V. J. E., Ottawa, Canada.

[Your motor should develop in the neighborhood of 25 h.p. at 900 r.p.m. in a boat, and should expect a speed of about 16 miles an hour, if your boat is not too heavily built.

The proper wheel for this outfit would be one having 3 blades 17″ in diameter by 24″ pitch. An auto clutch is not suited for motor boat use, especially if the size of the propeller which you use keeps the revolutions of your motor down to less than 900 or 1,000 r.p.m. The way to remedy the slipping clutch would be, of course, to decrease the size of the propeller in order to speed up the engine, so that the power transmitted per revolution would be relatively less. A flexible coupling might be used to advantage between clutch and shaft.

If, with the present wheel, the engine is not turning up at least 900 r.p.m., we would suggest the wheel which we have recommended, and if it still falls below 900 r.p.m., then about the only alternative is to put in a marine reverse gear.]

Wheel for Bumblebee.

To the Editor of MoToR BoatinG, *Sir:*

I have a 13′ Bumblebee hydroplane which weighs 175 lbs. For this hull I have a 6 cylinder, two cycle, three and a half bore by the same stroke. The motor weighs 145 lbs. and the normal speed of it is sixteen hundred. The total weight of hull, motor and equipment is four hundred and seventy pounds. What wheel would you advise me to use, and what speed should I expect? Would a wheel 16″ in diameter, and 32″ pitch, requiring 15 h.p. per 1,000 r.p.m., be all right for this hull?

S. W. D., West Lafayette, Ind.

[We would suggest a 3-bladed wheel, 15″ in diameter by 24″ pitch, which, if turned at 1,400 revolutions per minute, should give you a speed of about 26 miles per hour.]

New Things for Motor Boatmen

Two-Cylinder Rowboat Motor.

The Koban Manufacturing Company, Milwaukee, Wis., are putting on the market their Koban rowboat motor which is described as the only two-cylinder rowboat motor made. The engine is a variation of the two-cycle type, with two cylinders directly opposed, and, due to the equal distribution of all reciprocating parts, is said to be absolutely vibrationless and silent. It develops 3 h.p. and sells for $75.

* * *

Rayfield Carbureter.

This new Model A Rayfield carbureter, made by Findeisen & Kropf Manufacturing Company, Chicago, and replacing Model D is a water-jacketed instrument made in all sizes, from 1-inch to 3-inch. Advantages claimed for this carbureter are that it has three air intakes, an improved float arrangement, strainer trap, etc., and that it is impossible to make a mistake in adjusting it.

* * *

A New Reverse Gear.

The New York Gear Works, Brooklyn, have brought out a new enclosed type ball reverse gear in two models for up to 30 h.p., and up to 40 h.p. One of the features of this oil-tight gear is the elimination of the brake band which sometimes proves a source of annoyance in enclosed gears. Only the fingers are required for adjusting the forward speed, and the reverse mechanism adjustment is said to be automatic.

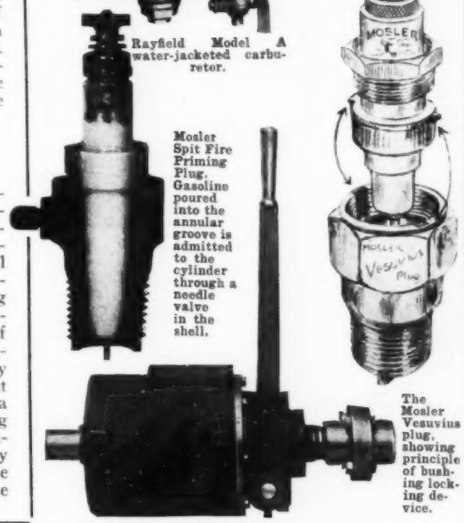
* * *

Vesuvius Plugs.

A. R. Mosler & Company, of Mount Vernon, N. Y., are featuring the new "Vesuvius" spark plug which embodies many features of interest. With a view to rendering the plug absolutely gas-tight, the shell is provided with two vertical slots or key-rings into which projections on a bushing fit, thus preventing the turning of the bushing, and, consequently, any movement of the copper-asbestos washer when the packing is tightened. As a result, the only force exerted on the washer is a direct thrust, and there can be no question that a gas-tight joint will be made. The sparking points are provided with knife edges to ensure extra efficiency. The Vesuvius may be easily taken apart and reassembled. The plug is supplied with either imported stone or porcelain insulations, and, in all sizes, at $1 each. The Vesuvius plug now comes packed in a neat tin box which effectively protects it from injury. As this cylindrical box is provided with a bayonet locking device to hold the cover in place, it makes a very useful receptacle to keep in the tool kit filled with cotta pins, washers, etc.

The Koban two-cylinder portable rowboat motor.

Rayfield Model A water-jacketed carbureter.



Mosler Spit Fire Priming Plug. Gasoline poured into the annular groove is admitted to the cylinder through a needle valve in the shell.

The Mosler Vesuvius plug, showing principle of bushing locking device.

The N. Y. Gear Works' new enclosed reverse gear.

* * *

Prest-O-Lite for Boats.

Adequate lighting aboard a boat is often a problem for the boatman, and acetylene lighting has a good many points in its favor. The Prest-O-Lite Company, of Indianapolis, point out that acetylene gas fixtures can be obtained to fit in with any interior scheme on a boat, and by the use of their Prest-O-Lite tanks, and the Prest-O-Liter, the question of the supply of gas and ease in igniting it at the fixtures is solved. The searchlight can also be operated from the familiar cylindrical tank, and by merely boring a hole and inserting the jet, oil running lights may be converted into gas lights.

* * *

Harroun Carbureter.

This kerosene carbureter, marketed by the Electric Renovator Manufacturing Company, of Pittsburgh, is fitted with a pipe through which part of the exhaust is forced, heating the space around the venturi to a cherry red. As the less volatile parts of the fuel are forced in a spiral motion against the heated surface by the suction of the motor they are vaporized.

* * *

An Adjustable Piston.

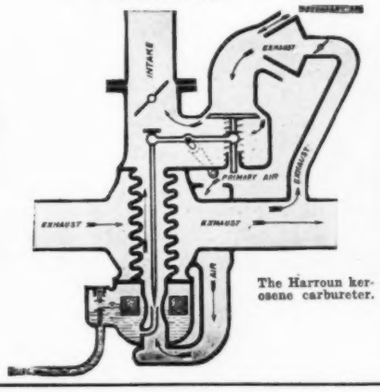
This patented piston manufactured by the Wille Piston Company, Brooklyn, is designed to correct loss of compression in new or old cylinders, and do away with the necessity of reboring cylinders which have become scored. The piston is fitted with a force cap which can be screwed down with a removable key, spreading the compression ring to the desired point, securing compression in the combustion space and preventing wasting of oil and excessive carbonization.

* * *

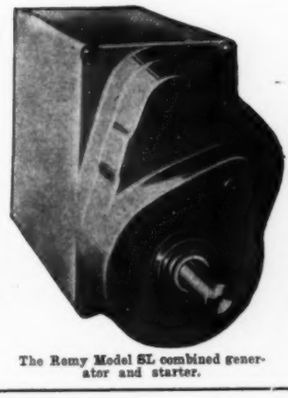
The Remy SL Starter.

This combined generator and starter is built by the Remy Electric Company, Anderson, Ind., in two sizes with several different windings. It may be termed a "Two-Story" instrument, as the armature of the motor is superimposed over the generator armature, although the field for both is a steel casting.

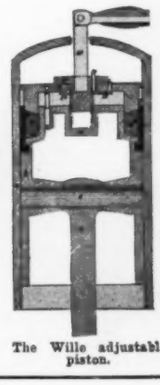
The Prest-O-Lite gas converter fitted to an oil lamp.



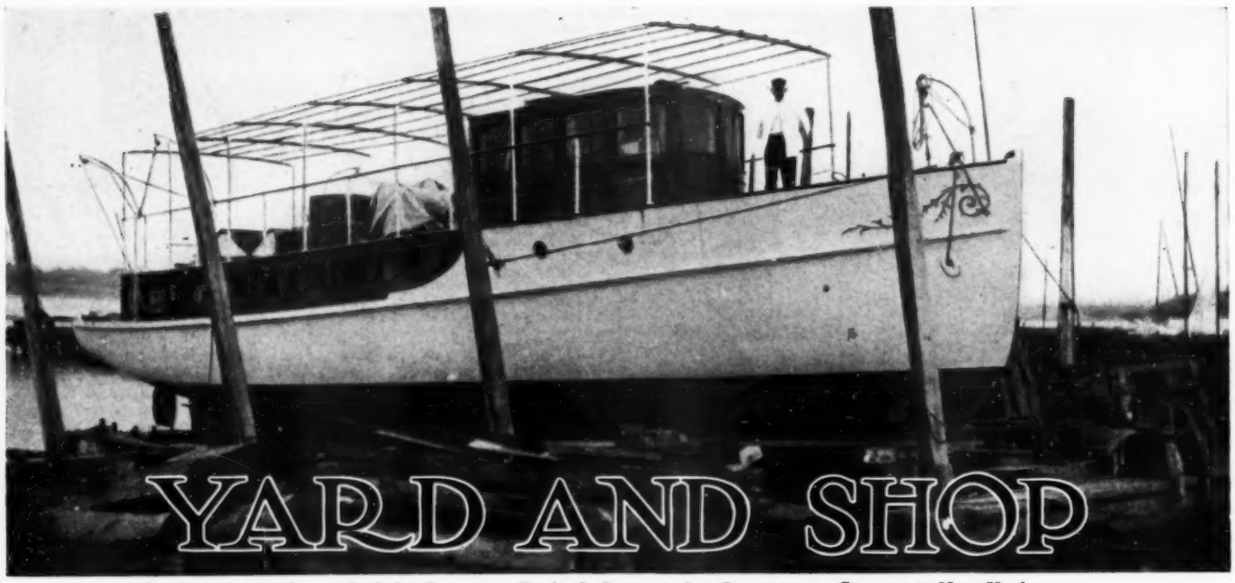
The Harroun kerosene carbureter.



The Remy Model SL combined generator and starter.



The Wille adjustable piston.



YARD AND SHOP

On the ways in the yard of the Greenport Basin & Construction Company, at Greenport, New York.

New Agency for Bridgeport Motors.

The distribution of Bridgeport motors in Eastern Pennsylvania, Delaware and South New Jersey has been placed in charge of Messrs. Carman & Bowes, with headquarters in the Bourse Bldg., Philadelphia. Carman and Bowes are well known to the marine trade in that territory and from now on will specialize on Bridgeport motors in the 2-cycle type and Eastern Standard motors in the 4-cycle type, and devote their entire energies to these two high-grade lines. They will carry stock of both lines, together with repairs for same.

* * *

Evinrude Motor Uses Bosch Spark Plug.

The Evinrude Motor Company, of Milwaukee, Wis., has placed with the Bosch Magneto Company, of New York City, one of the largest contracts for Bosch spark plugs ever placed by a concern manufacturing motor boat engines. The particularly hard service that a spark plug is subjected to in the case of the Evinrude outfit makes it necessary that only the best plug be adopted and this choice of the Evinrude Company certainly speaks well for the Bosch plug.

* * *

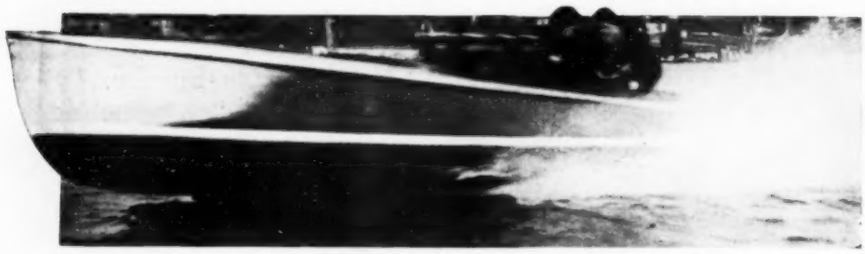
Mullins New Catalogue.

One of the handsomest catalogues of the new year has just been received from the W. H. Mullins Company, Salem, O., manufacturers of pressed steel motor boats, row boats, hunting and fishing boats, and marine engines. This handsome catalogue and other attractive literature will be sent to any prospective purchaser upon request.

* * *

Frisco Standard Engine for Pacific-Panama Exposition Ferry Service.

One of the photographs in this department is of the new launch, Crowley No. 19, owned by the Crowley Launch and Tug Boat Co., of San Francisco, Cal. This company has the concession for the excursion and sightseeing launches at the Pacific-Panama exposition to be held in 1915. Crowley No. 19 is the first of the fleet that they are having built and will be followed by 23 more boats of the same type and larger. No. 19, which has accommodations for about 150 passengers, is equipped with a 110 h.p. Frisco Standard engine, which drives the boat at a rate of about 10¼ miles an hour. Her dimensions are 65 feet overall, 17 feet 6 inches beam, and 6 feet draft.



The latest product of the C. C. Smith Boat & Engine Co., which they inform us has done 7¼ miles in 7¼ minutes, with a 2-mile tide, over an official course.

* * *

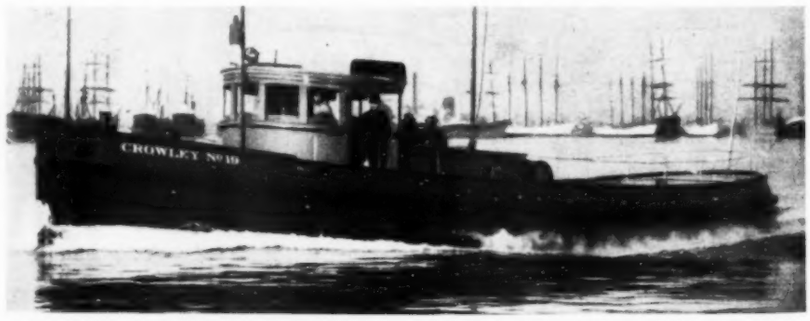
New Factory for Loew-Victor Engine.

The Loew-Victor Engine Company, of Chicago, Ill., have recently moved into their new factory at Oakley and Oakdale Avenues. Their main plant measures 160 x 140 feet, and their test room, having 12 testing stands, is a separate building, 50 x 50 feet, which is connected by overhead trolley with the main building. It is the belief of the company that they now have the most complete test room in the country. The new plant is of the latest construction throughout and was designed and built especially for the manufacture of the Loew-Victor marine engines. Visitors at the Chicago Motor Boat Show will be very welcome at this plant which, at the time of the show, will be in full operation.

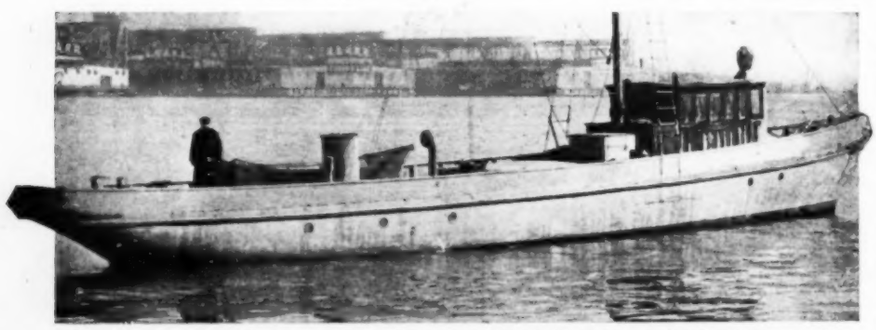
* * *

New Plant of the DeFoe Boat & Motor Works.

When, on August 19, 1913, fire destroyed the factory, offices, all correspondence, and stock designs of the DeFoe Boat & Motor Wks., Bay City, Mich., it seemed as if a knock down blow had been delivered to this company, but plans for a new and up-to-date boat manufacturing plant were laid the next day, and now the DeFoe Company has about 20,000 feet of floor space given over to the manufacture of both knock-down and finished boats. What seemed at first an overwhelming disaster proves itself even now to be an advantage, as the company starts out with an absolutely new and modern line of designs, building forms, etc. This company started in business about eight years ago and they state that since then they have never closed down a day for want of orders. The bulk of their business is in knock-down boats, but they have to their credit some excellent craft, both in the line of open launches and particularly in boats of the larger cabin cruiser type. Numbers of their knock-down boats are shipped to Australia and New Zealand as well as to all European countries, and they are to be found in such out of the way places of the globe as Borneo and Tasmania. While the new factory is double the size of the old plant, we are informed that there is every prospect of its being pushed to its capacity and beyond within the next thirty days.



Crowley No. 19, a San Francisco work boat, powered with a 110 h. p. Frisco Standard engine, capable of driving her 10¼ miles per hour.

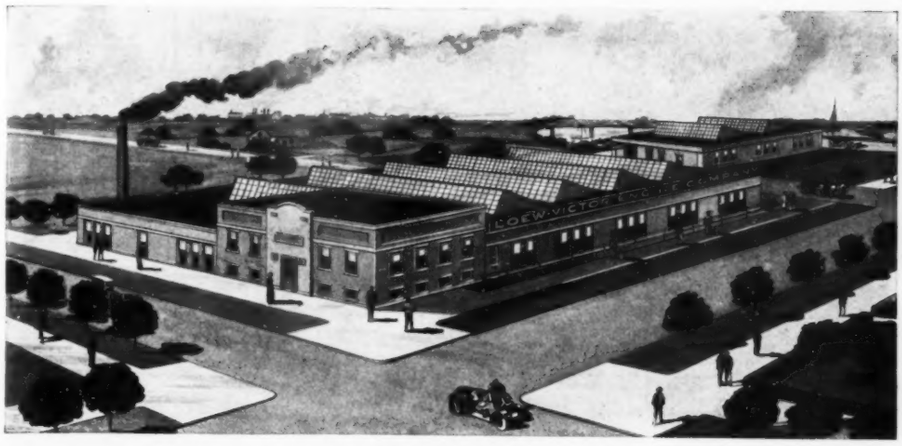


Wissoe, a Boston fishing boat, originally a steam yacht but now equipped with two 70 h. p. Holmes motors, which give her a knot better speed than she had in her steam days.

* * *

Racine Catalogue No. 17.

The Racine Boat Company, Racine, Wis., have just issued their new catalogue—No. 17—of cruisers and commercial craft, in which they show their latest designs. Copies of this catalogue will be sent to prospective boat and engine buyers upon request to the factory.



The Loew-Victor Engine Co.'s plant in Chicago. The main building is 160 x 140 feet and the testing room is 50 x 50 feet.

Wolverine Catalogue "O."

We are in receipt of the Wolverine Motor Works' new catalogue, "O," which is just off the press. This catalogue illustrates and describes Wolverine heavy duty marine engines in sizes from 12 to 100 h.p. and fitted to operate on kerosene, gasoline, and in the larger sizes suction producer gas. Copies of this catalogue will be sent to those interested from the factory at Bridgeport, Conn.

* * *

Mackay Trophy Won at Record Breaking Speed.

Flying 58 miles in 46 minutes, locating and accurately describing an advancing enemy, and finishing the flight with a glide of 8 miles to within 25 feet of a pre-arranged landing place, won the Mackay Trophy for Lieut. Joseph C. Carberry, Sixth Infantry. The flight was made in the latest Curtiss military tractor delivered to the U. S. Army Aviation Corps at San Diego, equipped with a Curtiss 90-100 h.p. motor. Lieut. Fred Seydel, C. A. C., accompanied Lieut. Carberry, Sixth Infantry. The flight was official observer. The judges were Captain Arthur S. Cowan, head of the First Aero Corps, and Dr. Albert F. Zahm. In connection with this record it is interesting to note that in more than 200,000 miles of passenger travel done in Curtiss flying boats during 1913, mostly by amateur aviators, not a man was injured.

A Hand V-Bottom 21-Miler.

One of the photographs on page 44 is of a V-bottom 24-footer—Pippin—built by the Davis Dry Dock Company, of Kingston, from plans and specifications supplied by William H. Hand, of New Bedford, Mass., and powered with a 20-35 h.p., four-cylinder aluminum-base Sterling engine. The owners of this little craft, Messrs. E. W. Waldron and E. V. Lesslie, of Kingston, Ont., state that they are highly satisfied with the entire equipment, as at most they only hoped for 20 miles an hour, but found when they worked her into shape that they could get 21 miles.

* * *

Durkee's Grasmere Factory.

For the third time since its formal opening two years ago it has been found necessary to make additions to Durkee & Co.'s factory at Grasmere. The last consists of a new brick addition to the present main factory, greatly increasing its facilities, as well as a structure intended for storage, surplus stock, etc. The buildings at 2 and 3 South Street have been thoroughly overhauled and made up to date in every way, and all departments are now in the reconstructed building.

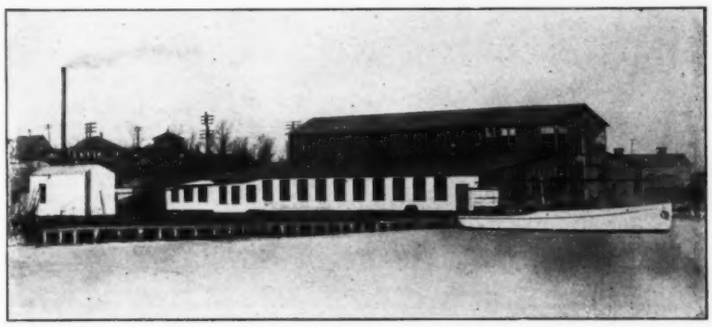
* * *

7¼ miles over a government chart measurement with a two-mile tide in 7 minutes and 15 seconds. You will no doubt hear from this boat in 1914 in many races."

* * *

Mosler Licensees.

Up to date the following manufacturers of spark plugs have taken out licenses for their spark plugs under Messrs. A. R. Mosler & Co., Canfield patent No. 612,701; Auburn Ignition Co., Auburn, N. Y.; Benford Mfg. Co., Mt. Vernon, N. Y.; Belvidere Screw Machine Co., Belvidere, Ill.; Bosch Magneto Co., New York City; Champion Ignition Co., Flint, Mich.; Champion Spark Plug Co., Toledo, O.; Frontier Specialty Co., Buffalo, N. Y.; Emil Grossman Mfg. Co., Brooklyn, N. Y.; Hartford Machine Screw Co., Hartford, Conn.; Jeffrey Dewitt Co., Detroit, Mich.; Lockwood Ash Motor Co., Jackson, Mich.; C. A. Metzger, Inc., New York City; Oakes & Dow, Boston, Mass.; Rajah Auto Supply Co., Bloomfield, N. Y.; Reflex Ignition Co., Cleveland, O.; Rex Ignition Co., New York City; Sharp Spark Plug Co., Cleveland, O.; Silvex Co., New York City; E. O. Williams, Syracuse, N. Y., and The V-Ray Company, Marshalltown, Pa.



Plant of the DeFoe Boat & Motor Works, at Bay City, Mich., replacing the building recently destroyed by fire.

Jas. C. Long, ready to start with her convoy of 4 barges, each weighing about 600 tons. She is powered with a 26-30 h. p. heavy duty Buffalo motor.

McCullough Returns to Brazil.

David McCullough, who has been demonstrating Curtiss hydro-aeroplanes and flying boats in South America, spent the holidays in New York and is now on his way back to Brazil. McCullough says the interest in boat flying as a sport is very great in Rio. He has taught several men to handle the machine, among them the son of the President of Brazil.

* * *

The Bridgeport Motor Co.'s "Jacking" Department.

A photograph in this department shows a corner of the assembling room of the Bridgeport Motor Co., Bridgeport, Conn., in which every Bridgeport motor built is semi-assembled and placed on the "jacking" stand, where it is operated by belt from an overhead jack shaft, and the bearings, working parts, etc., are given a thorough "working-in" oil. This operation is doubly important in Bridgeport motors, because the main crank shaft bearings are handfitted as snugly as possible. The process of jacking gives opportunity of discovering whether these bearings are fitted too closely and at the same time gets all of the working parts in condition for the power test on gasoline which follows. Each motor is jacked from five to ten hours, according to its size, and not infrequently motors are returned to the assembler several times to have bearings refitted before they are finally allowed to leave the jacking department as satisfactory.

* * *

The Carter Carbureter.

The H. W. Johns-Manville Co., New York, have recently taken over the control of the Carter carbureter manufactured by the Carter Carbureter Co., of St. Louis, Mo. This device is said to be different in principle from any carbureter on the market in that the supply of fuel is controlled by the suction of the motor instead of by mechanical means, and is, therefore, not only immediately responsive to the motor's demand when accelerating, but is also immediately cut off when the demand ceases, thus eliminating waste of fuel. It is said actually to reduce gasoline consumption 15 to 30 per cent. by breaking up the gas into a mist and thereby producing perfect combustion.

* * *

Rushmore Starters for Uncle Sam.

The Elco Company, of Bayonne, N. J.,

Marine Supplies Association Dinner.

The annual meeting and dinner of the Marine Supplies Association will be held on February 14, 1914, at the Hotel Marie Antoinette, Broadway and 66th Street. The dinner, which will be held at 7:15, will be preceded by a meeting at 5:15 p.m. Mr. Thomas Fleming Day will deliver an illustrated address of interest to all marine people. The tickets for the banquet are $3 and can be obtained from the secretary of the association, Mr. Arthur Falk, 149 Broadway.

* * *

A New Speed Boat.

The C. C. Smith Boat & Engine Co., Algonac, Mich., are considerably elated over the performance of the speed boat pictured in this department. In a letter they state in part: "We believe this to be the greatest boat in the world. We drove her

This 154-foot yacht is driven by two six-cylinder 200 h.p. Winton Gas Engine & Mfg. Co.'s engines. This boat was built in the Lawley yards from the designs of Gielow & Orr.

has adopted the Rushmore engine starter for six 175 h.p. six-cylinder marine gasoline engines, which have recently been furnished to the United States government. The starter used was the largest size, or Model A, weighing about 65 pounds. This machine is used on large automobiles with a 5-volt battery, but in this case was specially wound to operate with a 12-volt 160-ampere hour battery. It turns the engine over at 126 r.p.m., taking a current of 350 amperes at 11 volts, corresponding to 4.35 h.p. delivered. Its working efficiency is said to be 84½ per cent.

* * *

A Correction.

In the tables of marine motors published in the December issue of MoToR BoatinG we find that through mistake we gave the wrong horsepower rating of some of the motors manufactured by the Gilmore Motor Mfg. Co., Detroit, Mich. The correct ratings of the motors concerned are as follows: Where, in the first column, on page 61, we gave the rating for the single-cylinder Gilmore as 1 h.p., the correct figure is 1½; on the same page, the two-cylinder engine should read 3½ h.p. instead of 1½; on page 64, in the first column, their three-cylinder motor should be 5½ h.p. instead of 3½, and in the third column of the same page, the rating of the four-cylinder Gilmore should be read 8 h.p. instead of 5½ h.p.

* * *

Pippin, a 24-foot Hand V-bottom runabout, owned in Kingston, Ont. Her four-cylinder 20-35 h. p. Sterling engine gives her a speed of 21 m. p. h.

Marie E., a Bronx, N. Y., 30-footer, whose 9 h. p. Buffalo engine gives her a speed of 9 miles per hour.

David H. Purves, president of the Viper Company, Ltd., a notice concerning the product of which appears in this section on page 68.

Michigan Wheel Co.'s Eastern Distributor.

Mr. Oluf Mikkelsen, 69 Cortlandt Street, New York, is acting as the Eastern distributor of the Michigan Wheel Co., of Grand Rapids, Mich., and has put in a large stock of their reverse gears, propeller wheels and a complete line of motor boat accessories. Mr. Mikkelsen will give his customers prompt and courteous treatment, and a saving in time and freight will be effected by those living on the seaboard through dealing directly with him.

* * *

New Sterling Catalogue and Folder.

The Sterling Engine Co., Buffalo, N. Y., have just received from their printers copies of their 1914 catalogue, which is said to be a radical departure from any catalogue yet printed by them or by any one else, for that matter. It is a 48-page book, in which one sheet is devoted to each of the 12 models of Sterling engines, a complete description occupying one side of the sheet, while the other has specifications, foundation plans, prices, etc., thus saving looking back and forth through the book, looking for the description of any one model. Over sixty photographic reproductions of various boats are distributed through the book, and there are four pages in two colors of 12 famous boats powered with Sterling engines. The Sterling Company has also just gotten out a folder illustrating and describing nine of their engines, which should be of interest to boatmen. Either or both of these pamphlets will be sent on request to the factory.

* * *

George J. Tuckett Enters Marine Hardware Industry.

Mr. George J. Tuckett, a prominent Canadian tobacco manufacturer and a well-known yachtsman both in Canada and the United States, has become actively associated in the marine hardware industry in the capacity of president and treasurer of The Hall-Tuckett Co., of Rochester, N. Y., which firm will continue the marine hardware business formerly conducted by the Hall-Gibson Co. This business will be continued as heretofore, only with increased facilities and a larger and more prominent showroom. They will carry a large stock of yacht and motor boat supplies, said to be unequalled between Chicago and New York.

The W. S. Hall Co. will confine its attention exclusively to the manufacture of "Reliance Rochester" steering wheels.

* * *

The Sterling Engine Abroad.

The popularity of American marine engines in the export field is rapidly growing and orders for the higher-priced American engine are being received from all parts of the world. Probably one of the most interesting cases is that of an order for five engines from Constantinople, Turkey, recently received by the Sterling Engine Co. This order amounted to $3,685, and proves that there is a decided demand for the American engine in the export field. The Sterling Engine Co. also report that they have just received an order from Cartagena, Colombia, for one of their Sterling Kid 10 h.p. enclosed motors, price $550, this unique little engine to be installed in a 20-foot hand V-bottom boat. Another interesting sale by the same firm is that of a four-cylinder 20-35 h.p. engine to a large firm in Copenhagen, Denmark. This firm will handle Sterling engines for the whole of Scandinavia, excepting Sweden, and are laying out an energetic campaign to obtain business.

* * *

Hyde Propellers Do Good Work.

The Atlas Gas Engine Co., of San Francisco, Cal., recently shipped two launches to Mazatlan, Mexico, for the use of the Mexican government. The boats were 28 feet. long, of 6-foot beam, and were equipped with 12 h.p. Atlas engines. The requirements of the purchasers were that the boats make 9 miles an hour. At first the Atlas people told them that such a speed under the circumstances was impossible, but after tuning up the engines so that they delivered nearly 20 h.p. each on the brake, they installed them and started experimenting with propellers. They tried every propeller made, both on the east and west coasts, and finally decided on Hyde wheels, 26 in. diameter, 28 in. pitch, three bladed and with large surface. With these wheels installed 9 miles an hour was obtained over a measured course, which was a phenomenal speed for this class of boat and its equipment.

* * *

A Busy Motor Tug.

James C. Long is owned by the Illinois & Mississippi Canal Commission and is used for towing on the canal. The picture on the opposite page shows her ready to start pushing four barges loaded with heavy stone, weighing about 600 tons each. Upon occasion, she has pushed much heavier loads than this. Her speed is only three or four miles per hour on account of the difficulty in steering at a higher speed, but she has had no trouble in handling the heavy tows. Her power plant is a 26-30 h.p. heavy duty Buffalo engine. Since July last she has covered about 2,585 miles and a record has been kept of her gasoline consumption. It amounts to 1,287 gallons.

(*Continued on page 68*)

* * *

Suggestions for Handicapping

(*Continued from page 10*)

boat in shall receive a beaten allowance of 1% of its time for every time so beaten. This beaten allowance of 1% shall be added to its best trial time or handicap time, and shall apply successively on its next heat or race. In case of disqualification, the boat receiving the heat shall receive its 1% allowance, but the disqualified boat shall not be entitled to any allowance, and its time also shall be disregarded.

Any boat beating its best time the second time shall be penalized an amount equal to three times such excess. The new time, plus the penalty, shall be known as its best time, and shall be its handicap time in its next race.

The heats in every series shall be run consecutively, or finished before any new series is started.

A 22-foot runabout, which will be exhibited at the New York and Chicago shows by the Valley Boat & Engine Co., of Saginaw, Michigan.

A boat owner may tender the regatta committee a new time for his boat at any time, but such new time can not be accepted unless it is faster than its previous trial time or handicap time.

Any boat interfering with the progress of any other boat in race, cutting the course or touching the buoys, shall be disqualified from such race or heat.

A boat winning a heat or race in slower time than its trial or handicap time, after having received a beaten allowance, shall start its next race under such time, providing it is not slower than its starting time in the race.

CALENDAR

FEBRUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

MARCH

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

RACING.

Mar. 30-Apr. 4—St. Augustine, Fla., speed boat races.

June 6—Philadelphia to Bermuda.

June 20—Annual Ocean Race, New Rochelle to Block Island, 100 miles.

June 27—Sixth Annual Race, New York to Albany and return, 235 nautical miles. New York Motor Boat Club.

July 4—Colonial Yacht Club Race, New York to Cornfield Light Ship and return.

July 22—D. R. Y. R. A. Cruiser Race, Philadelphia to Baltimore, 369 nautical miles.

July 29-30-31—Gold Challenge Cup Races for speed boats, Lake George, N. Y.

SHOW DATES.

Jan. 31-Feb. 7—New York Motor Boat Show.

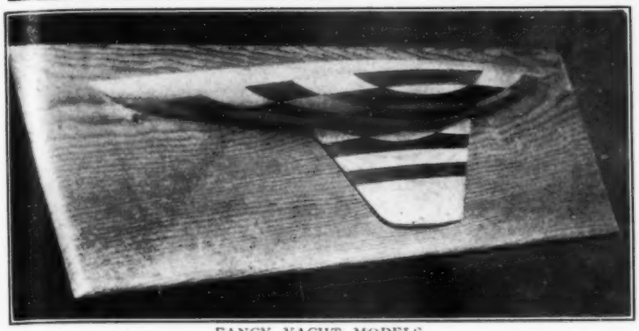
Feb. 21-28—Toronto National Motor Boat Show.

Feb. 28-Mar. 7—Chicago Motor Boat Show.

Mar. 21-28—Maritime Motor Show, St. John, N. B.

MOTOR BOATING ADVERTISING INDEX

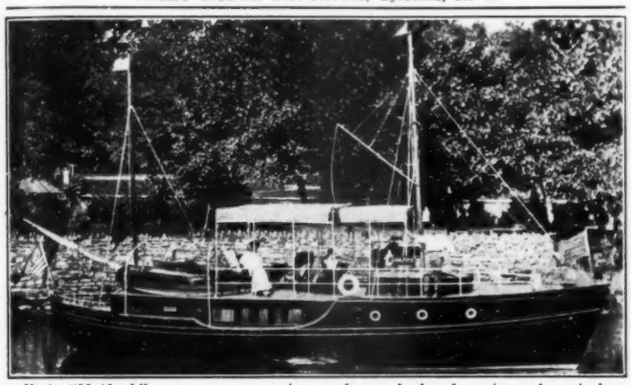
THE MOTOR BOATING MARKET PLACE



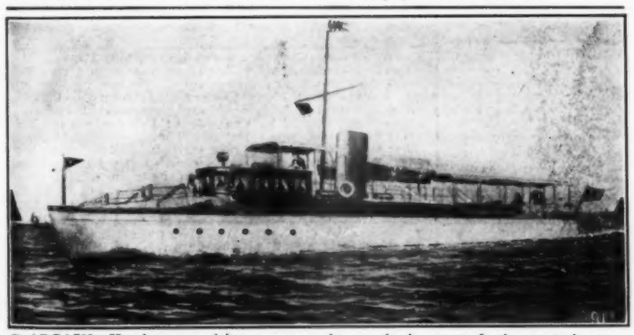
FANCY YACHT MODELS.

We are the originators of these beautiful Art Models, built only to order from the exact lines of your yacht, the alternating woods forward and aft showing the buttock and water-lines and producing a highly artistic effect. Circulars and estimates supplied on request. We also furnish special and stock designs of all kinds, alterations, changes in design, etc. Our large Album of Designs, containing over fifty modern designs, mailed for twenty-five cents.

YACHT MODEL EMPORIUM, Syracuse, N. Y.

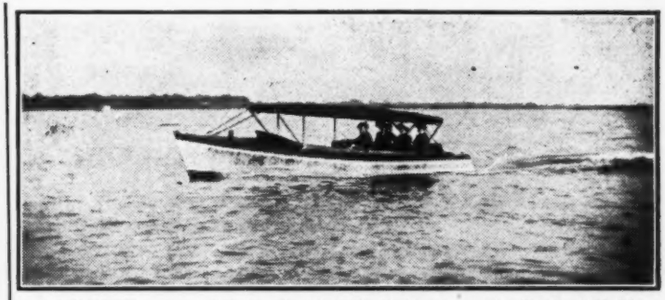


Yacht "Mulford," 45 x 12, 20-ton register; ask your broker for price and particulars, then see boat and make offer. Must be sold. P. M., c/o MOTOR BOATING.

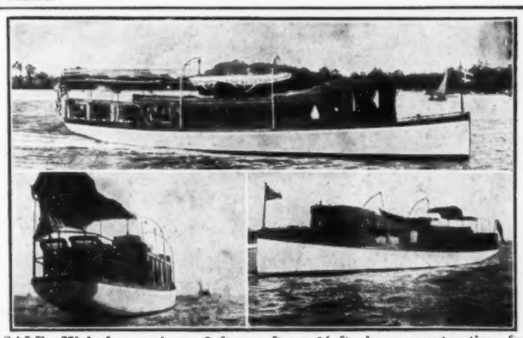


BARGAIN—Handsome cruising motor yacht, 92 ft. long, 12 ft. beam; twin-screw Sterling motors; speed 14 miles; price $10,000.00. Inspectable New York. Full particulars and plans, Whittelsey & Whittelsey, 11 Broadway, New York.

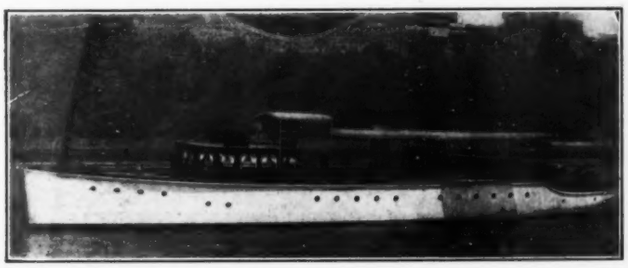
For Sale—Magnificent auto runabout, 25 x 5; 40 H. P. Reliance-Continental motor; fully equipped; wicker chairs, horn, lights, anchor, life preservers; upholstered in green pantasote; showed 24.73 on trial; new last spring. Will sacrifice. James K. McGuire, 42 Elm St., New Rochelle, N. Y.



KAZI MOTO.—30 ft. x 8 ft. Runabout built by the Camden Anchor-Rockland Machine Company, Camden, Maine. Fitted with 15 h.p. two-cylinder Knox, with Knox reverse gear. This boat is first-class in every particular, the general frame being made from Maine oak; planking, Maine pine; hardware, polished brass; cushions for all seats, standard awning, automobile steerer. Speed, 9 miles per hour. One of the most powerful and best seaboats on the Atlantic Coast. Has always had the best of care. For particulars as to price, apply to Camden Anchor-Rockland Machine Company, Camden, Maine.



FOR SALE—High-class cruiser, 48 ft. x 9 ft. x 3½ ft., heavy construction, from special picked material, copper fastened; cabin select quartered paneled oak, luxuriously furnished, piano, etc.; 32-h.p. heavy-duty, 4-cylinder, 4-cycle Standard motor (Standard Motor Construction Co., of Jersey City, N. J.). Write for full particulars to owner, John J. Barr, 206 West 105th Street, New York City, N. Y., U. S. A.



No. 1021.—Sale—Single-screw power yacht; speed 14 miles. 6-cylinder Twentieth Century engine, 150 H. P. Electric lights. Sleep 5 in owner's party. Boat now inspectable on the Lakes. Low price. Gielow & Orr, 52 Broadway, New York.

No. 2234.—For Sale.—35 ft. Elco-Express. Speed up to 23½ miles; 60 H. P. 6 cyl. A. & B. motor.; mahogany hull. In excellent condition, having had best of care. Equipment includes auto-top, windshield, leather cushions, lights, etc. Very desirable outfit. Bargain for quick disposal. Apply to Cox & Stevens, 15 William St., New York. Telephone Broad 1375.

FOR IMMEDIATE SALE.—One 6-cylinder, 12 x 14, Single Acting, 300 H. P. Standard engine, recently overhauled, in excellent condition. Shaft, propeller, starting batteries, muffler, exhaust piping, etc. Asking price $2,500.00. Are open to an offer. Albert E. Eldredge Corporation, 50 Church Street, New York City.

WANTED—One Sextant in good order. S. T. ATKINS, 4860 W. Madison St., Chicago, Ill.

WANTED—a 29-30-31-ft. Wm. Hands V-bottom boat without motor, otherwise complete, or 30 x 5 displacement of wave collecting type—made by Valley Boat Co., a Brockville Gilbert boat or Matthews boat. Address, F. Burdon, 2008 Park Ave., Montreal, Que.

STERLING ENGINE for sale. Model B, 25-40 h.p., aluminum base, magneto, rear starting device. Model L Schebler carbureter. New condition. Full particulars from B. M. Eoff, General Electric Co., Schenectady, N. Y.

SACRIFICE.

New 100 h.p. V-shaped 8-cylinder Trebut Racing Motor, value $1,500. Clutch, rear starter, Tachometer, Columbian propeller. Perfect. No reasonable offer refused. H. B. SIMMONS, 124 W. 123d St., New York.

DO NOT BUY A BOAT

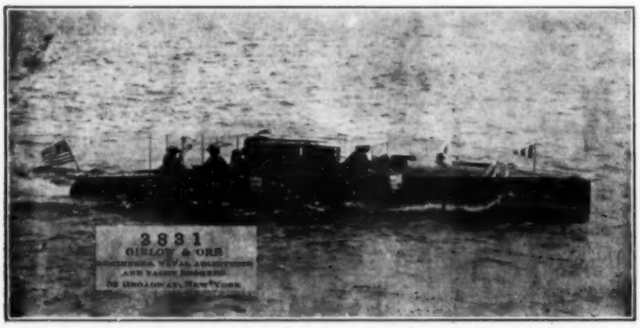
Until you have seen my new 30 ft. raised deck cruiser, 15 H. P. engine; all equipments. Built under my personal supervision. Launched August, 1913. Write me now for particulars. D. L., care of Motor Boating.

FOR SALE, CHEAP—Runabout—Speed boat, hull only. Size 22 ft. x 4 ft. Capable of 20 miles per hour with a 25 horsepower motor. Hull used only one season. Round bottom, planked with cedar, finished in mahogany. Engine compartment forward; cockpit aft. Address Lindermann, 51 W. 42d St., New York City.

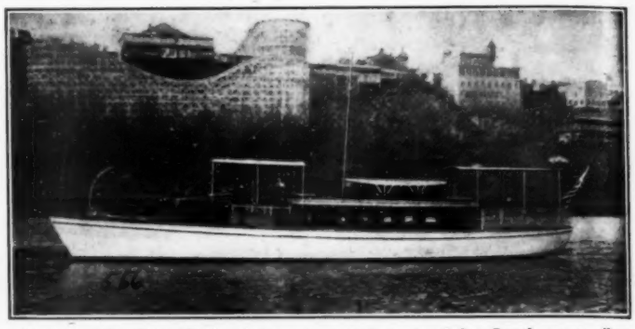
FOR SALE.—33-foot, 10 h.p., 40 passenger launch; standing top; closing windows. Franklin County Engine Agency, Greenfield, Mass.

CYLINDERS REBORED—Pistons and rings fitted, new cranks, connecting rods, cases, transmissions, any part for automobile or motor boat motor reproduced like original. The shop of quality. McCadden Machine Works, Minneapolis, Minn.

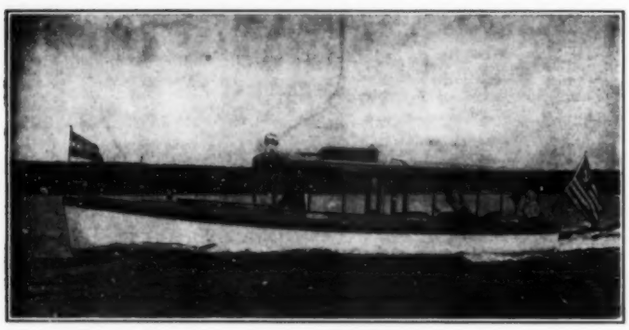
THE MOTOR BOATING MARKET PLACE



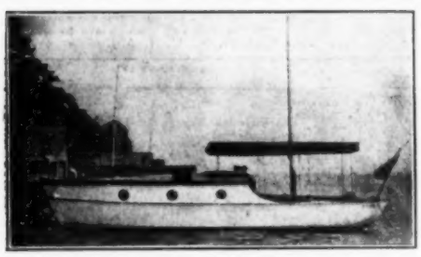
No. 3831.—Sale.—Unusually attractive day cruiser; length 49 feet; speed 19 to 23 miles. Mahogany construction. Price reasonable. Gielow & Orr, 52 Broadway, New York.



No. 566.—For Sale.—Bridge deck cruiser; 55 x 10 x 3.6 ft. Speed, 11-12 miles; 50 h.p. 20th Century motor. Mahogany finish throughout. Large saloon aft with two Pullman berths and two transoms, toilet room, separate galley, etc. Excellent condition. Price low. Cox & Stevens, 15 William St., New York.



No. 1822. — Standing roof launch, 32 x 7.4 x 2.4 ft. Built 1909. Speed, 10 miles. 21-28 h.p. motor, 2 cockpits. Forward cockpit 8 ft. long, after cockpit 10 ft. long. Finished in quartered oak, panelled. Complete equipment. Ideal boat for ferry or family service. In excellent condition. Price low. For further particulars apply to Cox & Stevens, 15 William St., New York City.



Boys! The best chance in a lifetime. If you can do better, don't write me. "Mabel E," a 28 ft. Racine cruiser, *fully* equipped, is for sale at a bargain. Send stamp for particulars. Everything ready to run except gasoline. Now's your chance. E. A. Gardner, 155 Glenwood Ave., Rochester, N. Y.

An exceptionally seaworthy, deep-sea cruiser will be sold at a bargain. 55 feet in length; two 45 H. P. Sterlings. In perfect condition and fully found and equipped. Complete information and inspection can be had by applying to Henry Douglas Bacon, Bath Marine Construction Company, Bath, Maine.

FOR SALE.—36 feet by 9 beam; speed 9½ miles. One-man control; four-cylinder, four-cycle Jeager Engine, 25 h.p.; complete equipment; $1200. Write to-day. Albert E. Eldridge Corp., 50 Church St., New York City.

WANT TO WIN RACES?

Semi-speed boat, all cedar, copper riveted, 28 feet by 6 feet beam; Sterling engine (1912), four cycle, 35 h.p. at 1000 r.p.m., rating about 65; speed 19 miles; won every race entered; good condition; carry eight persons; price $800.00. Selden, 7 Washington Terrace, New York City.

FOR SALE—Several new launch hulls, 16 ft to 25 ft. in length. Also one 35 ft. Raised Deck Cruiser. All will be sold for less than it cost to construct. If you want a bargain let us know your wants, and see if we can fill them. Address H. F. Tanner, Port Byron, N. Y.

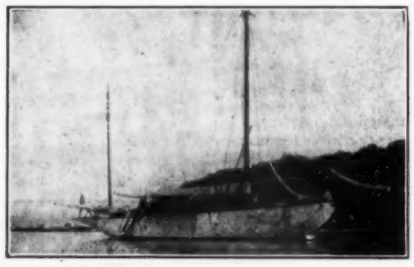
FOR SALE—One Michigan steel boat, 18 ft. x 5 ft.; 4 H. P. Detroit reverse engine; boat and engine guaranteed by manufacturers; used but little; whistle; acetylene lights; cockpit cover; puncture proof and non-sinkable. Complete, $200. One 26 ft. x 5 ft. wood hull, 4 cyl., 4 cycle, 16 H. P.; clutch; jacket; pump; cover; fine condition. A bargain. Guaranteed. $275. A. E. Barker, Grand Rapids, Mich.

DO NOT BUY A BOAT

Until you have seen my new 30-ft. raised deck cruiser, 15 H. P. engine, all equipments. Built under personal supervision. Launched August 13th. Write me now for particulars. THOS. B. CRANE, 43 Academy St., Long Island City, N. Y.

FOR SALE—Open launch "Awa," designed and built by F. S. Nock, 1911. Normand type of stern, mahogany trim, canvas covered decks. Engine is a two-cylinder, 7½ h.p. "Buffalo," with reverse gear, Bosch magneto, monel metal Maxim silencer, Aaron bilge pump. Copper, tank, etc., khaki spray hood, anchor and warp, and complete equipment. Very strong and capable of towing heavy loads. Price, $400. For other particulars address F. S. NOCK, East Greenwich, R. I.

FOR SALE.—This big, roomy convenient boat; built only two years ago; 38-footer; 10 ft. beam; raised deck cabin, will sleep six comfortably; speed 9 miles; one-man control; special price $1200. Write for more detail to Edward Keil, c/o Albert E. Eldridge Corp., 50 Church St., New York City.



FOR SALE—Excellent auxiliary yawl, 70 ft. 46 W. L. 17 ft. beam, 7 ft. 6 in. draft. Complete in detail and will be sold at a bargain and will stand expert survey. Address "M," Box "G," Huntington, L. I., N. Y.

AMBITIOUS MAN desiring profitable business connection can secure distributing agency with power to appoint sub-agents for KEROGO marine motor. Big opportunity as motor uses cheap kerosene or gasoline and sells at reasonable price. Will supply demonstrator at about factory cost and advertise locally. Reply by letter with references. CONSOLIDATED KEROSENE ENGINE WORKS, Chamber of Commerce, Detroit, Michigan.

THOROUGHLY rebuilt, 30-35 H. P. heavy-duty, 8½-in. bore, 9-in. stroke engine; speed 375 R. P. M.; Schebler carburetor, lubricators; Paragon gear installed on base with engine, air pump and coupling; guaranteed; $390.00. The Clay Engine Company, Cleveland, Ohio.

STROMBERG CARBURETORS, 1¾ inch—1½ inch. Any type. Absolutely new and the latest models. One-third off Regular Cash Price. Will ship to responsible parties for inspection. Address DEPT. L, BOX 1252, Providence, R. I.

WANTED—I WILL PAY $.50 FOR FIRST COPY OF MOTOR BOATING, JULY, 1913, received. W. C. READ, c/o UNION CARBIDE COMPANY, SAULT STE. MARIE, MICH.

17 ft. stepless Hydroplane, 25 to 27 mile speed; 25 H.P. three cylinder Pierce Budd engine, Bosch magneto; hull best oak and cypress construction, mahogany decks and finish; self aligning bronze strut and bearings; brass screw fastened throughout; used only half dozen times; price $700 cash. Can be seen at Evanston Yacht Club, Chicago. Address Stewart, 16 Balmoral Place, Winnipeg, Canada.

FOR SALE.—Champion speed boat "Haida Papoose II," 20-foot Smith-Ryan hydroplane; 150 h. p.; eight-cylinder Sterling; built summer 1913. Winner of Free-for-all, Kansas City; Perry Centennial Free-for-all, Buffalo; Blackton trophy, Buffalo; Perry Centennial Free-for-all, Louisville. Second in Chamber of Commerce cup, Buffalo; Speed trial cup, Buffalo; Thomas trophy, Buffalo. First or second in every race started. Beaten every boat in races to which she raced second in speed trials. Has made better than fifty miles an hour in official speed trials. Inquire of Max C. Fleischmann, No. 419 Plum St., Cincinnati, Ohio, or Smith-Ryan Boat & Engine Company, Algonac, Michigan.

LESS THAN COST.—We have on hand a supply of boat fittings and marine hardware of all kinds, including shafting, propellers, cushions, spark coils, etc., which we will not use in the construction of our 1914 models. Stock listed is new, only a small part being slightly shop worn. Complete list of this equipment, with prices for same, will be furnished upon application. THE W. H. MULLINS CO., Salem, Ohio, U. S. A.

FOR SALE—Rutenber motors, brand new, 4-cylinder, model 27, 3¾ x 5¼, 25-30 H. P., complete with fan, oiling system, flywheel, exhaust and water manifolds, spark plugs, water pump, and also magneto attached. Motor en bloc. All valves enclosed. Price, complete, $225.00. AUTOMOBILE APPLIANCE CO., 1714 Michigan Ave., Chicago, Illinois.

CANADIANS. Second-hand engine bargains. Send for list. Guarantee Motor Company, 73 Bay Street, North, Hamilton, Ont., Canada.

PRICES cut in two. Special sale sample launch hulls from 16 ft. to 36 ft., family and speed type, also several second hand bargains of our own make we have taken in trade. Send for list. Everett Hunter Boat Co., McHenry, Ill., Dept. B.

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

A BARGAIN—6-cylinder Speedway engine, 50-60-h.p., all latest improvements, Bosch magneto, Kingston carbureter, copper tank, bronze shaft. Room 803, 74 Broadway, New York City.

WILL exchange automobile in fine condition for first-class cruising motor boat. Send photo and full description. Sheldon, 153-4th Ave., Newark, N. J.

I HAVE for sale a new displacement type hull, 25 foot 10 long by 4 feet 6 beam. Cypress planking, oak stern and ribs. Lining, decks and combing all finished in mahogany. Can be made with power to run 35 miles. She is a beautiful craft. Seats 5 people. Two mahogany chairs, auto steering wheels. Price, $225. Dick Barrett Boat Mfg. Co., Muskegon, Mich.

FOR SALE—One 36 h.p., 3 cylinder, Model T Gray Motor with Paragon Clutch attached on extended base, including bronze shaft, bronze propeller, three carburetors and other equipment. All in good condition. Price, $185.00 f. o. b. Tuscaloosa. S. F. Alston, Tuscaloosa, Alabama.

BARGAIN—2 h.p. Detroit engine. Perfect condition. Price, $20. FRANK MAYER, 6 Shenango St., Greenville, Pa.

FOR SALE—21 x 5 oak deck launch, 8 h.p., 2 cylinder engine, reverse gear, rear starter, bronze-fitted auto top, spray hood and cover; outfit cost $750; will sell $400. Apply BOX 1, MoToR BoatinG.

FOR SALE: Houseboat, 18 x 70 ft., scow; suitable for canoe club, studio, seashore, business or family. Room 302, 939 Eighth Ave., New York City.

The Motor Boat Shows.

(*Continued from page 30*)

The New York Coil Co., New York, are showing at New York and Chicago their full line of marine ignition devices, including their well known Rhoades unit spark system, made up in perfect waterproof construction. This system is claimed to operate for practically an entire season on one set of six dry cells. It delivers a magneto type spark of the same heat value, it is said, regardless of the speed of the engine. A feature of extreme importance in two-cycle work is that it cannot deliver a spark if the engine is reversed, and so avoids the risk of trouble from explosions in the crankcase. Their complete line of ignition coils for all types of engines will be shown.

David Kahnweiler's Sons, New York, have a very complete exhibition of their marine accessories and necessities at the New York Show. Numerous types of life preservers, cork buoys, bumpers, cork and canvas fenders are shown in addition to their Simplex fire extinguisher. Descriptive literature about this extinguisher is distributed, and a demonstration of its effectiveness in subduing a flame is given.

J. K. Halsey, of New York, is showing at Madison Square Garden the Racine portable rowboat motor made by the **Motor Oars Co.,** Racine, Wis. This motor, which is of the 2-cycle type, develops 2 h.p. at 800 r.p.m., but the makers state that its flexibility is so great that it can be slowed down to 300 r.p.m. without missing, and speeded up to 1,200 r.p.m. It is said that the motor never backfires, and that it can be throttled as readily as motors of the 4-cycle type. It is so light that it can be carried with ease; it can be attached to the stern of a rowboat in a few minutes' time, and once in place is said to drive the boat at a speed of 8 miles per hour. **Mr. Harry F. Dexter,** of 16 Exchange Place, New York City, is the New Jersey representative.

The Heinze Electric Company, of Lowell, Mass., are exhibiting at the Garden, in addition to their well known line of timers, coils, magnetos and spark plugs, two new ignition systems. One of these which is being demonstrated is a six-cylinder, high-tension magneto, and the other a four-cylinder, high-tension, dual system magneto. In this, the armature itself is used for stepping up the current, and no outside coil is employed. This system is guaranteed in every respect.

The Debevoise Company, Brooklyn, New York, manufacturers of paints and varnishes, have a booth at the New York Show, in which they are illustrating the advantages of using their goods. In addition to a display of their paints, they have numerous panels covering the various lines of marine paints which they manufacture.

The Indian Refining Company, New York, are exhibiting at New York, in the name of the Havoline Oil Company, and have on display Havoline Marine Motor Oils and Grease. They are distributing the same as last year their Havoline pennant and sundry descriptive matter, giving an outline of their products and containing numerous testimonials from some of the leading boat and engine builders of the country who use and recommend Havoline oils. The claim of superiority of Havoline oils is based on the extensive filtration process through which they are put before being ready for the market. Because of their being filtered they can be depended on to lubricate and to keep down the carbon deposits to a minimum.

The Noyes Machine Company, South Portland, Me., are exhibiting at the New York Show samples of two and three-blade Thompson Automatic Feathering Propellers. They have a full line of them. In addition, they are showing a propeller in operation in a tank of water, the tank having a glass front through which the operation of the wheel may be observed. They also have a three-blade feathering propeller of five-foot diameter mounted on a stand.

Higgins & Seiter, of New York, manufacturers of fine china and rich cut glass, are showing at Madison Square Garden, many of their new designs in decorated china and glass

(*Show exhibits continued on page 66*)

The Motor Boat Shows.

(*Continued from page 65*)

especially suitable for yachts. Some new decorations in sterling silver are also shown. This is one of the largest and finest exhibits that this company has ever had.

The Lewis Electric Welding and Manufacturing Company, Toledo, Ohio, are making a specialty of intake and exhaust valves. These are constructed with heads of 3½% nickel steel, 30 to 35% nickel steel and grey iron, and all of them are welded to low carbon stems. They also make a line of fine grey iron castings. Some of these grey iron castings are on exhibition at the New York Show, as well as a full line of the above-mentioned valves. This concern makes valve cages for engines of various size from patterns furnished by their customers. They make these complete, from furnishing the castings for machining to ready for seating in the engine. They also make valves for the cages if so desired.

Hector McRae, Baltimore, Md., is at the New York Show with a full working outfit of his "6-150" type of boat lighting equipment. This outfit, which is the most popular size produced by this house, is designed to furnish ample ignition for the usual cruiser of 50 feet and less. It burns four 16 c.p. lamps for eight hours, and running lamps and 25 c.p. searchlight can be used with it. There are many other electrical accessories in this line, of which the best known, perhaps, is the Champion accumulator. Other devices include circuit-breakers, searchlights, lamp fixtures, hand lamps, etc.

The Marine Efficiency Company, New York, are exhibiting a device at the New York Show, which, while not of direct concern to the motor boatman, will be of considerable interest to him. This device is Schmidt's Patent Davit, whereby a lifeboat can be lowered from the deck of a steamer in the smallest possible time, and by one man. The davit consists chiefly of two steel frames, bolted to the deck, in which two quadrant-arms move, held at their lowering ends by wire cables, fastened to the opposing sides of the lower end of the frame. At the upper end of these quadrant-arms steel prongs project, in which the boat hangs as soon as it has been raised above deck. The boat is hoisted and lowered by the steel cables, running through the ends of the quadrant-arms and through the pulleys at the end of the upright steel frame-posts, and thence down to the deck where the cable is wound around a revolving steel drum. By an ingenious arrangement of control, one man can lower the boat into the water, and, furthermore, can enter the boat himself and let the boat down as slowly or as rapidly as desired.

Wheeler & Schebler, Indianapolis, Ind., are showing at New York and Chicago their Model "D" Schebler carbureter which is largely used on marine engines, their Model "L" which is used by four-cylinder, four-cycle motor manufacturers, Model "H" as used on small electric generator outfits, and on tender engines, and their new Model "R." The last of these is designed for use on both four and six-cylinder motors, and is a single-jet, raised-needle type, automatic in action. There are but two adjustments—the low-speed needle adjustment which is made by turning the air valve cap, and an adjustment on the air valve spring for changing its tension. This carbureter is made in 1", 1¼", 1½" and 1¾" sizes. Another item shown by this company is their Type B gasoline strainer, which is designed not only to collect dirt and sediment in the gasoline, but to hold back from the carbureter water formed by condensation in the gasoline tank.

* * *

Replacing Valve Stems

(*Continued from page 38*)

bility of springing the guide out of alignment or injuring the seat in the valve chamber before the bushing is properly set.

All that is needed is a short piece of cold rolled steel rod of such a diameter as to nicely fill the hole in the bushing (see sketch at Fig. 2). The rod should be threaded with a die at each end, one end for a considerable distance, the other end enough to take a standard nut. The method of drawing in the guide is evident from the sketch on page 38.

Yard and Shop.

(*Continued from page 44*)

Bruns Kimball & Co. to Handle Northwestern Motor at Philadelphia.

A deal has just been closed by which Bruns, Kimball & Co. will job the well-known Northwestern line of two-cycle engines manufactured by the Northwestern Motor Company, of Eau Claire, Wis. These engines, it is said, have attained a very strong foothold in the East. A full line of sample engines from 2 to 18 h.p. will be on display on the company's new floor, at 608 Arch Street, Philadelphia, and also a good stock of repairs. Northwestern engines have been on the market for many years and their many friends will be pleased indeed to know that a stock of engines will be on hand in the East for quick delivery.

* * *

The Electric Launch Co. Changes Its Name to the Elco Co.

The Electric Launch Company, of Bayonne, N. J., will hereafter be known as The Elco Company and remain under the same ownership and management as heretofore. In recent years this compay has been most gnerally known by its trade-mark—"Elco"—and on account of the large variety of boats and engines which the company now builds, the change of name has been considered advisable. The company will continue to design and build all types of motor boats and motor yachts equipped with gasoline and electric power, gasoline and heavy oil engines, for pleasure and commercial uses.

When the Electric Launch Company was incorporated in 1892, the electric launch was first introduced in the country, and at that time there was a large demand for the electric-propelled boat, over fifty of them having been built the following year for use at the Chicago exposition. Electric launches continued in popularity for a number of years and are still used on inland lakes and rivers where one desires the maximum comfort, and absence of noise and vibration rather than long distance or high speed. The electric launch appeals particularly to the ladies, who can handle and operate a boat of this type with ease.

During the past twelve years the principal business of The Electric Launch Company has been in Elco motor boats, motor yachts, and all types of gasoline boats for pleasure, government and commercial uses.

The Elco Company is a subsidiary to the Electric Boat Company, whose business is in the building of the Holland type of submarine. It is said that over fifty per cent, of the world's submarines are of this class and built under the patents of the Electric Boat Company.

* * *

New Loew-Victor-Powered Fast Runabout.

What will be one of the first fast runabouts in New York waters for the new year is a 30-footer now being constructed in the shops of William E. Haff, New Rochelle, for H. C. Cushing, Jr., after designs by his brother, N. C. Cushing, of New York City. This boat is a sister to Adelaide, which won the Commodore's silver cup at the Columbian Yacht Club in 1911, and powered with a Model 13, 40-50 h.p., 4-cylinder, 4-cycle, Loew-Victor, she is expected to do better than 20 m.p.h. This motor will turn a Hyde three-blade 17 inch x 28 inch propeller 1,200 r.p.m. The planking of the boat will be ⅝ inch cedar, copper riveted to frames ¾ inch x ¾ inch, and spaced 6 inches on centers.

* * *

A Fast 20-Foot Yacht Tender.

In the booth of the Mercury Motor Company, New York, at the Motor Boat Show, will be found a six-foot model of a speed boat designed by Mr. Adolph Apel, of the Ventnor Boat Works, Atlantic City, for Mr. Albert H. Disston, of the Disston Saw Works, Tacony, Pa. The original of this model, which could not be shown for lack of space, is described as a sensationally fast mahogany displacement yacht tender, powered with a Mercury motor. She made 31½ m.p.h. on her trial. She weighs 1,450 pounds without her crew, can be carried easily from the parent boat's davits, and yet accommodates 7 people with ease. She turns a special three-blade propeller 1,550 r.p.m. Fitted with complete automobile control, her motor is carried forward in a watertight compartment and her fuel tank in the rear. She is said to be an exceptionally dry boat even at top speed.

* * *

Wissoe, a Converted Express Cruiser.

Frank R. Neal, fish merchant of Boston, Mass., has recently bought the old 75-foot steam yacht Wissoe and had her converted into a gasoline-driven cargo boat, for use in transporting at a rapid rate large consignments of fish from an over-stocked market to such places as are offering a high price because demand exceeds supply. Mr. Neal has had a good deal of experience with Holmes motor and so he directed the Holmes Motor Co., of West Mystic, Conn., to convert his boat and fit her with two 70 h.p. Holmes motors. That his faith in this motor was justified is shown by the fact that Wissoe is now making a mile better than she ever did in the halcyon days of steam. In making over the boat her hull was strengthened and the luxurious staterooms were torn out to make room for fish pens with a capacity of 300 barrels bulk. A set of heavy foundations was prepared for the motors which occupy the after cabin, and a 900-gallon steel tank for fuel was strapped under the after deck. Water tanks holding nearly three barrels were placed in the bow to assist in trimming ship. Although her machinery is well aft, Wissoe trims to best running lines with her hold full of fish.

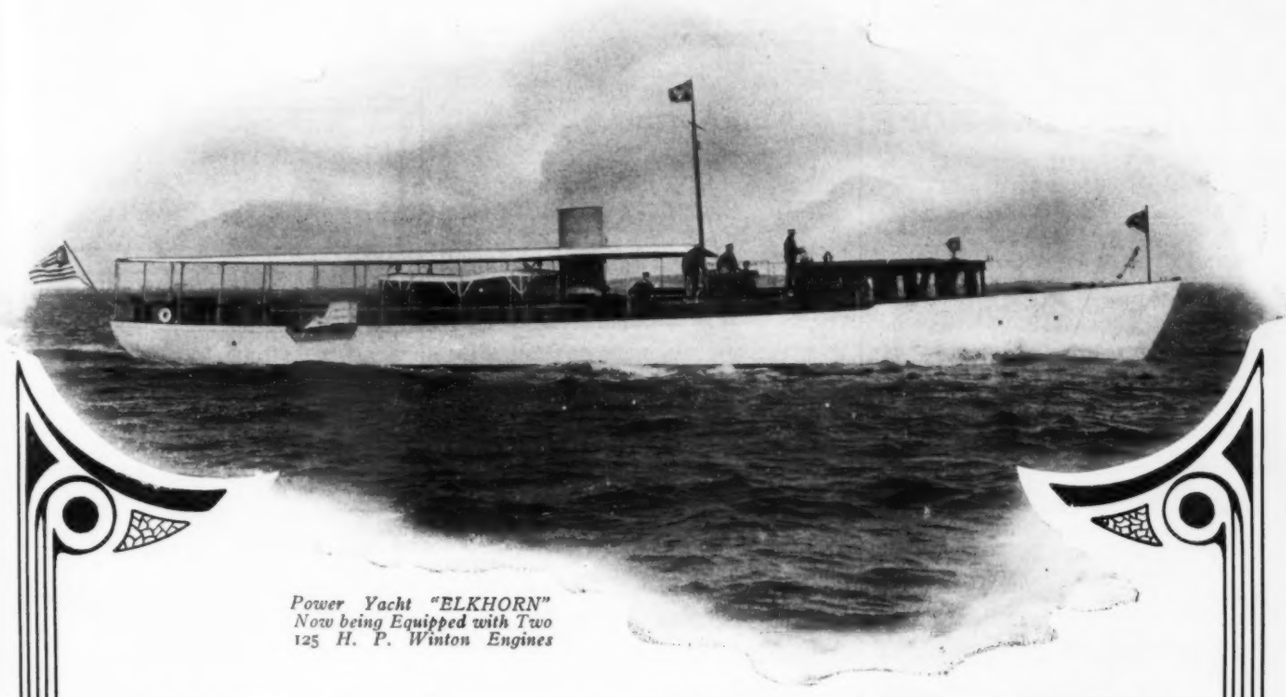
She is equipped with a 3 h.p. Ferro direct-connected electric generating plant, and has a 5 h.p. hoister, supplied by the Gray-Aldrich Co., Boston, for handling her cargo. With her present propellers her Holmes motors are delivering more than their rated power at 480 r.p.m. and are driving the boat at 15 nautical m.p.h.

* * *

The Motor Car of the Sea.

In a new bulletin just got out by Albert Hickman, of Boston, and the Viper Co., and numbered 16, there are cited in detail the many advantages claimed for the Viper Fifth type of inverted V-bottom sea-sled, which is called the motor car of the sea. In this bulletin, which is illustrated with 16 reproductions from photographs, great stress is laid on the comfort which is claimed as one of the chief advantages of the sea-sled even when running at high speeds and in water rough enough to cause severe discomfort to passengers in the older types of boats.

(*Continued on page 70*)



Power Yacht "ELKHORN"
Now being Equipped with Two
125 H. P. Winton Engines

Assure the Success of Your Power Yacht by installing

WINTON
MARINE ENGINES

That a yacht can be no more successful than its power plant is a fact proved by the large number of well designed and constructed boats that are classed as failures.

Therefore, it is vitally important that the prospective owner *thoroughly* investigate the merit of the engines which commend themselves to his attention, for the engine industry is passing through an evolution, and the successful engine of the past is not necessarily the successful engine of the present.

The owners of the largest and finest power yachts now in course of construction *have* investigated and *have* chosen Winton Engines in preference to all others.

In the Winton Engine, departure from conventional design and the incorporation of new features (exclusively Winton) have eliminated sources of trouble long associated with marine gasoline engines.

An engine has been evolved that combines certainty of performance with qualities of operation heretofore impossible of attainment. So quiet as to be practically noiseless, with an entire absence of vibration, this engine is the marvel of all who have seen it.

Our various sizes of Power Plants, Lighting Sets and Yacht Tender Engines are available for demonstration to all interested persons.

The Winton Gas Engine & Mfg. Co.

2116 West 106th Street **Cleveland, Ohio**

Yard and Shop.

(*Continued from page 68*)

The reason for the easy motion of boats of the inverted V-bottom type is that the spray instead of being thrown out to either side, where, incidentally it is in a prime place to be blown inboard by a cross-wind, is thrown down and under the boat, forming a cushion of compressed air on which the forward part of the boat lights after rising on a wave. It is said of these boats, which are Mr. Hickman's invention, that the sensation obtained when riding in them is only duplicated in machines which travel through the air—that compared to ordinary boats they are as long-bladed racing skates are to the short, uncomfortable, rocker blades.

The readers of this magazine are fairly familiar with the radical features of the Viper Fifth type seasled, so a few words here will suffice to describe them. There is almost no point of similarity between the seasled and displacement boats or hydroplanes, for where the bow of these other types ends in a sharp edge, the bow of the sea-sled is blunt and wider than the stern. By reason of the inverted V-bottom the waterlines are outcurving instead of incurving—an arrangement which is said to do away with tripping—and the top sides are parallel fore and aft. When planing, the sled seems to rise almost bodily out of the water, instead of pointing her bow in the air. Propulsion in this boat is also new—screw propellers giving way to surface propellers, which never operate with more than two blades in the water at one time. Steering is by side rudders—another novelty—and because of the little water required for rudders and propellers, the sled can skim easily over water only a foot deep.

* * *

In Regard to Carbureters.

The R. O. C. superheater heats the fuel direct just before it is fed to the carbureter while it is in a liquid state, but it is not vaporized until it is sprayed into the mixing chamber; it then evaporates by its own heat, for the same reason that water blown from the blow-off of a steam boiler immediately evaporates.

In the R. O. C. superheater a small quantity of fuel is surrounded by a jacket kept hot by exhaust gases being let through it by means of a small pipe tapped into the exhaust pipe close to the engine.

This heating takes place shortly after starting the engine, and it is claimed gives the following advantage:

1. All the fuel sprayed into the mixing chamber evaporates during every suction stroke of the engine, thus forming a uniform mixture at all engine speeds, and therefore a marked reduction in gasoline consumption.
2. No liquid gasoline ever reaches the cylinders, no matter what the shape of the inlet manifold may be, and therefore the lubrication of the cylinders is not affected; meaning less cylinder oil, less cylinder wear, the same mixture for all cylinders, and therefore a more steady running motor with less wear and tear on the moving parts.
3. A more rapid ignition, insuring more power.
4. A lower grade of fuel can be used with perfect combustion, and therefore less smoke and carbon formation.

This device is handled by the National Economic Supply Co., 1777 Broadway, New York City.

* * *

A Motor Life Boat Cruiser.

(*Continued from page 34*)

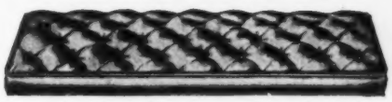
partment from without, no matter how rough the sea is.

Fuel tanks are under seats in the self-bailing cockpit, therefore, in case of leaks, they cannot drain into either motor compartment or cabin. In fact, one may smoke or start the stove in the cabin without danger. This safety from fire is a marked departure, years ahead of the best thought as applied to small sea-going craft. Fires, by the way, are most commonly the result of a kick-back of the motor caused by some congestion in the fuel pipe. The Holmes life-boat laughs at kick-backs and has conquered a menace. Construction of the Holmes motor makes it easily possible to draw fangs from a flare by piping the carbureter air intake inside the base. The motor, therefore, scavenges the base as well as the entire compartment. Moreover, it is impossible to fire into the bilge because the cement floor of the compartment presents no bilge wherein vapor may lurk.

All motor controls are on the compartment bulkhead, including the compressed air starting device and other details connected with operation of this flexible, get-at-able engine. Every door that pierces a compartment shuts against gaskets by means of a stout, instantly manipulated locking device, every appliance being calculated to be fool-proof. The motor uses kerosene for fuel, cutting cost of operation to 30 cents per hour with cruising radius of several hundred miles. Selection of kerosene resulted from exhaustive e..ciency tests conducted by the Holmes plant that demonstrated entire feasibility of the fuel under any possible working condition. A wireless telegraph apparatus, a powerful searchlight with current generated by dynamo connected to motor, have been incorporated in the remarkably complete equipment of this little boat.

A feature that compels admiration is ability of the Holmes life boat to tow a string of common open boats away from suction when the big ship disappears, or to keep the helpless row boats from crashing against the steel plates of a dying liner. With her tow the Holmes boat may shape a compass course direct for land or, perhaps, head in a direction whence comes some rescue ship in answer to a wireless appeal.

KENYON
Cushions and Pillows



A Kenyon Boat Cushion

Are a valuable part of the equipment of any motor boat or yacht. They are made from "Kapoc," a flax, which we bring from far Java. This flax floats like a bubble on the water and is so resilient that when used in cushions or pillows they always retain their shape and firmness. Thus the Kenyon boat cushions and pillows are both

The Kenyon Life Preserver Pillows

Life Easers and Lifesavers

affording luxurious comfort, yet in an emergency being capable of sustaining the weight of the heaviest person for two days in the water.

These cushions and pillows are handsome and durable, being made in six shades of genuine steer hide, artificial leather and velours. The cushions, tailored to fit your boat, are made with the Kenyon Never-Pull-Out Buttons, which are rustproof and guaranteed to stay in forever.

Kenyon Boat Tops

made in various styles and sizes are waterproof and form a needed protection against the elements. A proof of the efficiency of these boat tops is shown in the fact that they are found on all successful American built motor boats.

Gathering Kapoc for Kenyon Pillows and Cushions

Our catalog on request.

The R. L. Kenyon Company

371 Meadow Street

WAUKESHA

Wisconsin

Make This a Different— More Enjoyable Summer

Get closer to nature. Spend more time in God's big, healthful out-doors. Enjoy His beautiful, charming lakes and rivers. Skim over them at will wherever your fancy wishes. But don't let that pleasure be marred with an aching back and blistered hands from pulling at oars and paddles. Instead, become the owner of a power boat. If you don't feel that you can afford a launch, attach a Caille Portable Boat Motor to your row boat. If you haven't a row boat, buy one. If you can't buy one, rent one. But get one some way. Then buy yourself a

Caille Portable Boat Motor

Attach it to your square or pointed stern row boat by turning two thumb screws and you have a reliable little family launch—a power boat that will take you to the fishing or hunting grounds, the camp or summer home, at the rate of 7 to 9 miles an hour. Or, if you desire, you can run it slow enough to troll.

The Caille Portable Boat Motor generates 2 H. P. and weighs but 55 lbs. It is steered by a rudder like a launch—not by the propeller. This enables you to steer accurately up to a pier or landing even after the power is shut off. The rudder is of our folding stone-dodging type (Pat. applied for). The weedless propeller is protected by a substantial fin. The motor can be easily adjusted to any angle or depth of stern. It starts with half a turn of the flywheel. Runs in salt or fresh water. Can also be supplied with a high tension magneto at small additional cost.

Send for Beautiful Catalog

Every lover of boating will find this book most interesting. A postal brings it promptly by return mail.

Good Reliable Dealers Wanted

The tremendous demand that is bound to exist for this remarkable little motor makes it imperative that we have the best possible representation at all boating localities. To Dealers we also offer the sale of our widely known line of regular marine engines described on the opposite page. Our attractive agency proposition will be gladly mailed on request.

When Writing Be Sure to State

Caille Perfection
1421 Caille Street.

Get Perfect Service from Caille Perfection Motors

Ask the most enthusiastic motor boat owner you know to show you his motor. Look at the name plate. Dollars to doughnuts it will be a Caille Perfection.

He's enthusiastic because he gets nothing but pleasure from his boat. His motor never balks—never refuses to start—never gives him a moment's trouble. He takes his family and friends out for a spin with perfect confidence that they will have nothing but pleasure from beginning to end. He knows not the humiliation of having to ask a tow. He knows only the keen, sweet pleasure given by a perfect running motor—the kind of pleasure that you, too, can secure from the various sizes and types of

Caille Perfection Motors

in any style of pleasure or work boat. Every one is the result of years of careful marine motor design and construction. Every one is made by the most skillful marine motor mechanics—the cream of the world—men who have made the production of perfect marine motors their life's ambition—an ambition which readily meets its fulfillment in the Caille factory. For here they are given the best of materials, the most modern machinery and the best of working conditions. They can't help producing perfect motors—the kind that run continuously with that smooth, sweet purr.

Supplied to Burn Kerosene or Gasoline

Our Perfection Kerosene carburetor is one of the most perfect carburetors made. It enables you to use kerosene with the same success and satisfaction as gasoline. Alcohol, distillate, petrol, benzine or naphtha can also be used with perfect results. This carburetor can be furnished on any Caille Perfection Motor at small additional cost.

Built in All Sizes from 2 to 30 H. P.

and in one to four cylinder designs. We have special types for pleasure boats, work boats and speed boats. For open boat service we recommend our Perfection Ignition System. This is absolutely water proof and is unaffected by climatic conditions. It does away with batteries, coils, timers, etc.

The eight horse power unit power plant shown below is an ideal equipment for the average family launch. It embodies a reversing gear mounted on the same bed as the engine, insuring perfect alignment of shaft and reducing friction to a minimum. All working parts (except fly wheel) are fully enclosed preventing oil from splashing out on clothing.

Send for Our Marine Motor Blue Book

Describes our entire line in detail. No motor boat owner or enthusiast should be without it. Your request on a postal is all that is necessary.

Some Good Territory Still Open to Agents

But we must have good, live, hustling agents. Men capable of handling a big marine engine business and giving it the proper attention. If you are that kind of a man, we want to send you our proposition.

What Type of Motor You Are Interested In.

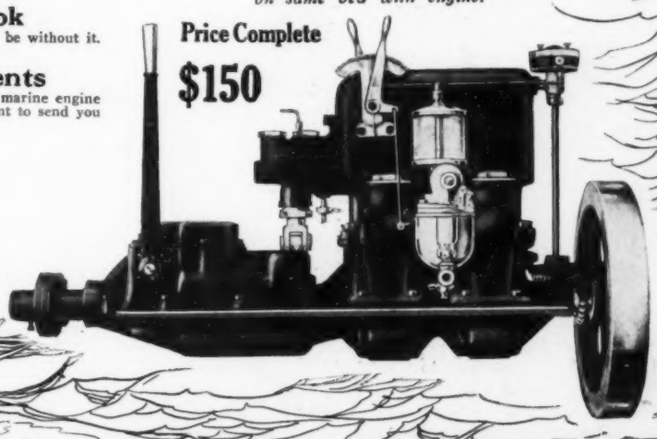
Motor Company

Detroit. Mich.

8 H.P. Caille Perfection Unit Power Plant embodying reversing gear mounted on same bed with engine.

Price Complete

$150

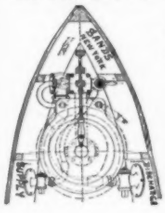


THE RECOGNIZED STANDARD OF THE WORLD

An Assortment of Reliable Fixtures and Specialties for Small Motor Boats, including the popular "WINNER" and famous "BOW" Closets

THE "BOW" CLOSET, PLATE S-2050.
(Design Patent Applied For.)

The "Bow" Closet, Vitro-Adamant bowl, 2½-in. pump, located at rear, fitted with swing handle. Quick opening supply valve. Space occupied, 15 x 24 in.
Pump rough, with finished trimmings, oak seat, N. P. Hinges.....$30.00
Dimensions: Front to back 23 in., width 14 in., height 12 inches.
Net weight, 35 lbs. Shipping, 70 lbs.



SUGGESTION FOR INSTALLATION OF THE "BOW" CLOSET IN EYES OF SMALL BOATS. WITH PAIR OF OUR SPECIAL SEACOCKS.

THE "WINNER" PLATE S-2061. (Copyrighted.)

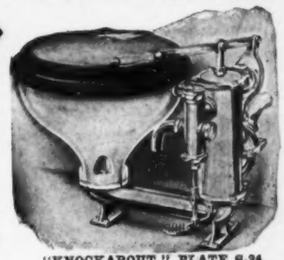
The "WINNER" Pump Water Closet for use above or below the water line, Vitro-Adamant flushing rim hopper bowl. Oak Seat with nickel plated brass post hinges. 2½-inch Combination Supply and Discharge Pump. "Sands Special" quick opening supply Valve and "Sands" patent back water check valve.

Plate S-2060 The "WINNER" Closet as described with oak seat - - - - - $19.00
Plate S-2061 The "WINNER" Closet as specified above with oak seat and cover - - - 20.00

PLATE S-2062.

The "Anglo" Composition flanged Sea Valves, with straight couplings and locking plate, for use on the supply and discharge of small pump closets.

Price per pair with strainer for supply $6.00



"KNOCKABOUT," PLATE S-34.

The "Knockabout" Improved Pump Water Closet, round flushing rim bowl, composition foot valve, hinges.
Pump rough, finished trimmings, oak seat and cover $52.50
If mahogany seat and cover, add 1.50
Weight: Net, 45 lbs.; Gross, 75 lbs.

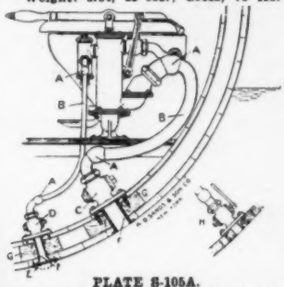


PLATE S-105A.

Suggestions for Installation of any small Pump Water Closet.
A—Leadwiped joints. B—Lead supply and discharge pipes. C—Discharge sea cock, bent coupling. D—Supply sea cock, bent coupling. E—Brass strainer on supply. F—Lead thimbles of lead pipe. G—Wood blocks. H—Shows connection for single planking and sea cock with straight coupling.

PLATE S-3183.

The "Manatee" 14-inch Vitro-Adamant Flat Back Lavatory with N. P. Basin Pump with Low Down Spout, N. P. Waste Plug, Chain Rubber Stopper and Cock Hole Chain Stay. No Trap.
Price $18.50

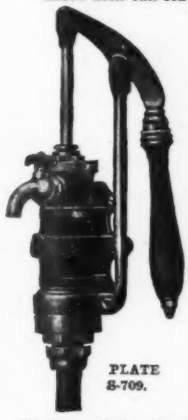


PLATE S-709.

All Brass Galley Pump, 1½ in. Cylinder, reversible handle with shut-off cock.
Polished all over ...$8.50
N. P. all over.....10.50

PLATE S-186.

The "Arco" [illegible] Lavatory, N. P. copper combined [illegible] basin and slab, N. P. composition single-acting pump, combination swing supply faucet. N. P. copper lining waste and supply couplings, oak case.
Complete $35.00
Height over all, 19½ inches; width, 15 inches; depth closed, 5½ inches; depth open, 16½ inches; basin, 10 inches.
The basin and slab are made of one piece of copper, dispensing with all seams and preventing the collection of dirt.

PLATE S-702.

Brass Basin Pump. 1½ in. Cylinder.
Polished all over..$10.50
N. P. all over.... 12.50

PLATE S-3186.

The "Macon" 12-inch Vitro-Adamant Corner Lavatory with one N. P. Compression Faucet, N. P. Waste Plug, Chain Cock Hole, Chain Stay and Rubber Stopper, No Trap.
Complete as described $7.75

PLATE S-4280

New Pattern Improved All Brass Galley Pump, 2" cylinder with shut off cock.
Pol. Brass $12.50
Pol. & N.P. 14.00

PLATE S-774

Rough Brass Reversible Pump for Oil and Gasolene, fitted with special valves and detachable bulkhead clamps. 2" Cylinder, Length 18".
Price $8.00

PLATE S-1010.

Glass Deck Light with brass rim, no hinge.

2½ in.....	$ .75
3 in.....	.90
4 in.....	1.50

All Cast Bronze Round Raised Strainer, improved heavy pattern with self-cleaning perforations. Used on water supply for any and all purposes. Flange is drilled for screws; five sizes.

No. 1, 2½" in diam., each				$ .35
No. 2, 3	"	"	"	.50
No. 3, 4	"	"	"	.65
No. 4, 5	"	"	"	1.00
No. 5, 6	"	"	"	1.50

PLATE S-128

The "Helena" Composition Outboard Connection with flap valve and coupling is used on discharge of closets, lavatories, sinks or on exhaust of engines.

	¾"	1"	1¼"
L. P.	$2.00	$2.75	$3.75
	¾"	1"	1¼"
I. P.	$2.00	$2.50	$3.50
	1¼"	2"	2½"
L. P.	$5.00	$7.00	$10.00
	1¼"	2"	2½"
I. P.	$4.50	$6.50	$9.50

PLATE S-1002.

Round Flange Composition Monitor Air Ports.

Diam. of Opening	Price Plain	Diam. of Opening	Price Plain
8 in.....	$10.75	11 in.....	$17.00
9 in.....	13.00	12 in.....	20.00
10 in.....	14.50	14 in.....	26.00

Larger sizes also made.

PLATE S-750-A.

New Style Double-Acting Brass Bilge Pump, with foot attachment and 5-foot discharge and suction hose with brass strainer.

PLATE S-771.

Brass Gasoline and Oil Pumps with special valves and clamps.

Dia.	Lg.	
1¼	15	$5.00
1¼	18	7.00
2	24	13.00

No. 1—Chamber 1¼-in. diameter, 15 in. long $5.00
No. 2—Chamber 1¼-in. diameter, 15 in. long $6.50
No. 3—Chamber 2-in. diameter, 24 in. long $14.00

PLATE S-131

The "Carlton" Brass Outlet Connection with long nipple and flanged locknut to make up on inside.

	¾ in.	1 in.	1½ in.
Iron Pipe.....	$1.75	$2.50	$3.75
	¾ in.	1 in.	1½ in.
Lead Pipe.....	$2.00	$3.00	$4.50

PLATE S-132½.

All Cast Bronze Heavy Pattern Combination Inlet Connection, with Strainer and Scoop.

Size	Iron Pipe.	Lead Pipe.
½"...	$2.25	$2.65
¾"...	2.50	2.90
1"...	3.00	3.40

PLATE S-1001.

Round Frame Composition Port Light, with one clasp, for wood vessel.

Dia. Opn.	Pl. Brss.	Pol. Brss.
3"...	$2.50	$4.00
4"...	2.75	4.25
5"...	3.15	4.80
6"...	4.40	6.00
7"...	5.50	7.25
8"...	6.50	8.25

PLATE S-130.

The "Alton" Brass Supply or Inlet Connection has perforated strainer on suction side. Used for supply to closets, lavatories, engines and pumps.

	¾ in.	1 in.	1½ in.
Iron Pipe.....	$1.75	$2.25	$3.75
	¾ in.	1 in.	1½ in.
Lead Pipe.....	$2.00	$2.50	$4.25

Full Line of Ventilators, Bath Tubs, Showers, Basins, Sinks, Gasoline and Bilge Pumps Shown in Catalog "R" Free Upon Request

A. B. SANDS & SON COMPANY

Largest Manufacturers in the World **MARINE PLUMBING SPECIALTIES** 22-24 Vesey St., New York, U. S. A.

1849—"SIXTY-FIVE YEARS OF QUALITY"—1914

Build Your Busi

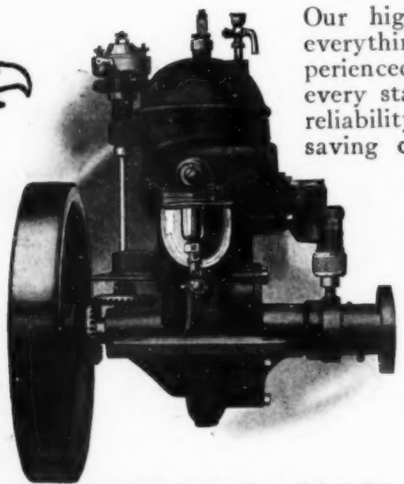
Secure the Rig

"Eagle" Two Cyc

Become associated with an organization that successful business. Arrange to sell Engines mand will be. Arrange to sell a line of and types for every purpose, an engine for

"Eagle" High Speed Models

4 Sizes



1914 High Speed Single Cylinder, Model "K," 3½ H.P., Bore 3⅝—Stroke 3¼—Weight 90 lbs.

Completely Equipped

with Schebler carburetor, "Black Eagle" spark plug, roller contact-timer, bronze plunger pump with self-contained check valves, priming cup, grease cups, ball thrust bearings, flange coupling. "Eagle" water-cooled exhaust silencer, wrenches, screw driver, can of cylinder oil, can of grease, two oil cans, lag screws, and instruction book.

Price, $50.00

Our high speed engines contain everything demanded by the experienced user of marine engines; every standard of strength, speed, reliability, money saving and worry saving construction, convenience, and design have been provided. No marine engine offered today, at any price, can boast of features that "Eagle" Engines do not have; there are less parts to our high speed models than on any engine known of this type, they are light in weight, and high in power. This line is the one you require for the speed hydroplanes, "V" bottom and Bumble Bee type of boats. They will more than meet expectations and then the price is *right*.

Medium Speed Models

8 Sizes

This line of engines was designed to meet the requirements of the conservative class who prefer comfort to speed. The "Eagle" Medium speed models are in great demand. This line of "Eagle" Engines has been sold for several years and are well known for their successful and durable qualities. They

"LOOK FOR US AT THE NEW YORK

THE STANDARD CO.,

ness for All Time

ht to Supply

le Marine Engines

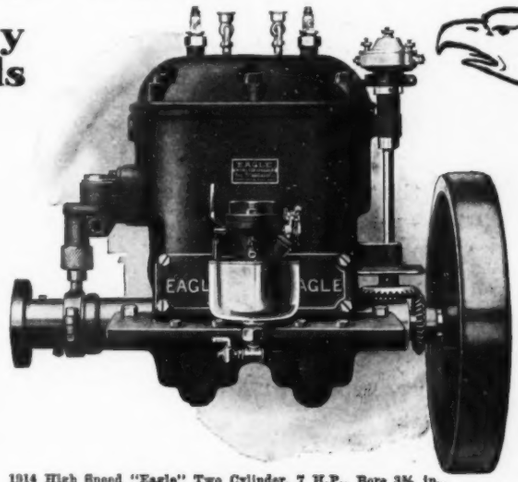
can assist you materially in building up a that the more you sell, the greater the de- engines that is complete, consisting of styles each requirement, and without substitution.

are beautifully finished, and having been properly designed in the beginning, they have never required any radical change in construction. This line is the one you require for family boats, cruisers, and light working outfits.

Real Heavy Duty Models

7 Models

For fourteen years the "Eagle" heavy-duty models have enjoyed such a good reputation that we are free to state that they have no equal as a satisfactory equipment in boats where long life, constant service, and steady work is demanded. Engines of this type are in use in all parts of the world. They enjoy a splendid reputation and prestige, due to the uniform and excellent service they have rendered under all conditions of service. This type of engine is used extensively in open-sea work, and will be found installed in cruisers, heavy work boats, as auxiliary power in catboats, and other sailing craft.



1914 High Speed "Eagle" Two Cylinder, 7 H.P., Bore 3⅜ in., Stroke 3¼ in., Weight 136 lbs.

Completely Equipped

with Schebler carburetor, "Black Eagle" spark plugs, roller contact-timer, bronze plunger pump with self-contained check valves, priming cup, grease cups, ball thrust bearings, flange coupling, "Eagle" water-cooled exhaust silencer, wrenches, screw driver, can of cylinder oil, can of grease, two oil cans, lag screws and instruction book.

Price, $95.00

From the description, as noted, you will be impressed with the completeness of the "Eagle" line. It affords you an exceptional opportunity to supply an engine for every purpose. It is the most complete and most standard line of Two Cycle engines offered. It is controlled by one of the greatest business organizations in the country who have engines to deliver when you want and urgently need them.

Your opportunity for "building a business for all time" is here. Are you wise enough to grasp it? Write for our new catalog. Don't delay. There has never been a time in our history when so many requests for representing us have been received. We are looking for the live ones. Write us or talk it over at the New York and Chicago Motor Boat Shows. We will be there with a full line of all models.

AND CHICAGO MOTOR BOAT SHOWS."

Torrington, Conn., U.S.A.

Build Your Busi

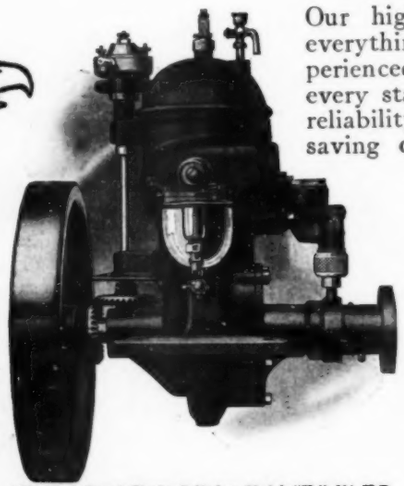
Secure the Rig

"Eagle" Two Cyc

Become associated with an organization that successful business. Arrange to sell Engines mand will be. Arrange to sell a line of and types for every purpose, an engine for

"Eagle" High Speed Models

4 Sizes



1914 High Speed Single Cylinder, Model "K," 3½ H.P., Bore 3⅝—Stroke 3¼—Weight 90 lbs.

Completely Equipped

with Schebler carburetor, "Black Eagle" spark plug, roller contact-timer, bronze plunger pump with self-contained check valves, priming cup, grease cups, ball thrust bearings, flange coupling, "Eagle" water-cooled exhaust silencer, wrenches, screw driver, can of cylinder oil, can of grease, two oil cans, lag screws, and instruction book.

Price, $50.00

Our high speed engines contain everything demanded by the experienced user of marine engines; every standard of strength, speed, reliability, money saving and worry saving construction, convenience, and design have been provided. No marine engine offered today, at any price, can boast of features that "Eagle" Engines do not have; there are less parts to our high speed models than on any engine known of this type, they are light in weight, and high in power. This line is the one you require for the speed hydroplanes, "V" bottom and Bumble Bee type of boats. They will more than meet expectations and then the price is *right*.

Medium Speed Models

8 Sizes

This line of engines was designed to meet the requirements of the conservative class who prefer comfort to speed. The "Eagle" Medium speed models are in great demand. This line of "Eagle" Engines has been sold for several years and are well known for their successful and durable qualities. They

"LOOK FOR US AT THE NEW YORK

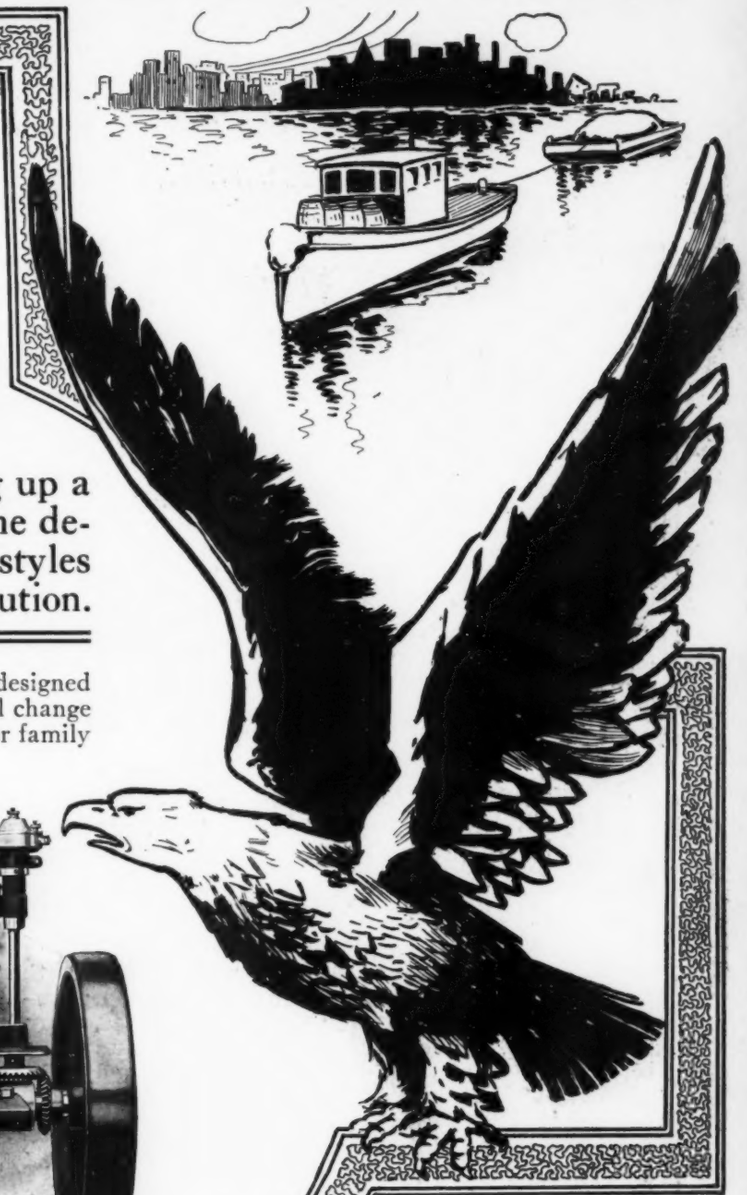
THE STANDARD CO.,

ness for All Time

ht to Supply

le Marine Engines

can assist you materially in building up a
that the more you sell, the greater the de-
engines that is complete, consisting of styles
each requirement, and without substitution.

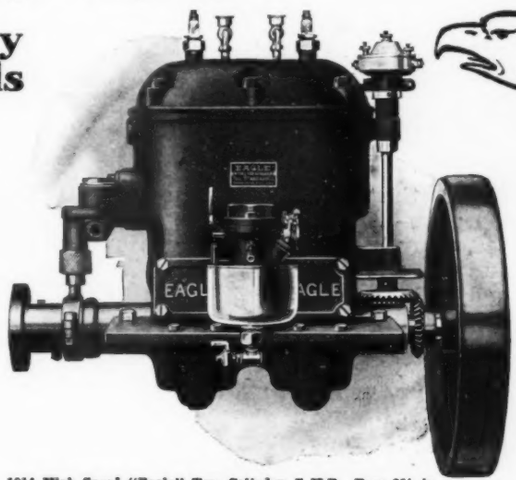


are beautifully finished, and having been properly designed in the beginning, they have never required any radical change in construction. This line is the one you require for family boats, cruisers, and light working outfits.

Real Heavy Duty Models

7 Models

For fourteen years the "Eagle" heavy-duty models have enjoyed such a good reputation that we are free to state that they have no equal as a satisfactory equipment in boats where long life, constant service, and steady work is demanded. Engines of this type are in use in all parts of the world. They enjoy a splendid reputation and prestige, due to the uniform and excellent service they have rendered under all conditions of service. This type of engine is used extensively in open-sea work, and will be found installed in cruisers, heavy work boats, as auxiliary power in catboats, and other sailing craft.



1914 High Speed "Eagle" Two Cylinder, 7 H.P., Bore 3⅝ in., Stroke 3¼ in., Weight 136 lbs.

Completely Equipped

with Schebler carburetor, "Black Eagle" spark plugs, roller contact-timer, bronze plunger pump with self-contained check valves, priming cup, grease cups, ball thrust bearings, flange coupling, "Eagle" water-cooled exhaust silencer, wrenches, screw driver, can of cylinder oil, can of grease, two oil cans, lag screws and instruction book.

Price, $95.00

From the description, as noted, you will be impressed with the completeness of the "Eagle" line. It affords you an exceptional opportunity to supply an engine for every purpose. It is the most complete and most standard line of Two Cycle engines offered. It is controlled by one of the greatest business organizations in the country who have engines to deliver when you want and urgently need them.

Your opportunity for "building a business for all time" is here. Are you wise enough to grasp it? Write for our new catalog. Don't delay. There has never been a time in our history when so many requests for representing us have been received. We are looking for the live ones. Write us or talk it over at the New York and Chicago Motor Boat Shows. We will be there with a full line of all models.

AND CHICAGO MOTOR BOAT SHOWS."

Torrington, Conn., U.S.A.

FRIDAY.
Jan. 2nd,
1 9 1 4.

Mr. Julian Chase, Editor,
Motor Boating,
New York City.

My dear Mr. Chase:-

When the writer took hold of Mr. Van Blerck's proposition August 1st, 1913, he was perfectly amazed at the achievements of this man who, without suitable organization and struggling under the grievous handicap of capital and manufacturing facilities entirely inadequate, had nevertheless produced a motor the design and construction of which had been proven by the fierce test of several successive racing seasons and who was dividing honors and business with the oldest in the marine engine industry.

I could not help but feel that with proper organization, financial resources and an up-to-date plant that Mr. Van Blerck would "Out Do" himself in the production of motors of the highest quality and continue to set the standard in marine engines for power, speed and reliability.

Such facilities have now been provided. The cash paid-in capital of the Van Blerck Motor Company has been increased to meet every requirement of a progressive business. A new plant - the most modern and efficient in the country has been built and put into full operation. Every department, engineering, production, testing, selling and accounting, has been organized with experienced men in charge.

BEST OF ALL, MR. VAN BLERCK WILL HENCEFORTH BE ENABLED TO CONCENTRATE ALL OF HIS TIME AND ATTENTION TO SUPERVISING AND CHECKING EVERY MANUFACTURING AND TESTING OPERATION.

I thank you for this opportunity to bring these facts to your attention and through you to the public. It will be worth your while to watch Van Blercks in 1914.

Very truly yours,

VAN BLERCK MOTOR COMPANY,

Chas. B. Page
V. Pres. & Treas.

C. B. PAGE:
MS.

[redacted]

Non-Sinkable
Non-Leakable
Non-Rustable

Magnificent Steel Launch $96

Stylish 16-Footer Fully Equipped with Engine Ready to Run!

1914 models of the Michigan Steel Launch are now ready for delivery at **the lowest prices quoted on boats** anywhere. Our special low price schedule for immediate orders covers every launch we make—16, 18, 20, 23 and 27-footers. All sizes in stock for immediate shipment. We are the sole owners of patents covering rolled-seam constructed boats. This construction lasts practically a lifetime. We have the only construction that has successfully made the terrific trip through Grand Canyons of Colorado and Arizona. Write for booklet describing trip. Gold medals awarded our Boats and Engines by Royal Imperial Tech. Society, St. Petersburg; Internat'l Exposition, Milan; Nat'l Motor Boat Show, Paris.

Equipped Bow and Stern with Air-Tight Compartments. The Non-Sinkable Boat—Absolutely Safe! Needs No Boathouse

Leave your Michigan Launch in the water or out on the beach in all kinds of weather for months. It is puncture-proof. Equipped with the wonderful Detroit Engine, guaranteed for five years, any horse-power from 2 to 50. Fewest moving parts of any engine made. Anyone can run it. Free fully illustrated catalog shows all 1914 models. Don't buy a launch until you see this book. Write for special proposition and prices to Demonstrator Agents. STEEL ROWBOATS, $20. Need no boathouse. Big money in boat livery.

MICHIGAN STEEL BOAT COMPANY, 1236 Jefferson Avenue, Detroit, Michigan. U. S. A. (162)

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Insure Perfect Connections, Permanently Trouble-Proof. Vibration cannot loosen them. Applied without removing thumb nut. Best connectors ever designed.

Breaznell Battery Clips for Dry Cells, increase efficiency by giving perfect contact always. | **Breaznell Spark Plug Clips.** Holds wire locked without solder as well as gripping plug terminal.

60c. Dozen **C. O. D. Parcels Post** **30c. Half Dozen**

Order to-day. *C.O.D.—no risk.* *Special rates to dealers and jobbers.*

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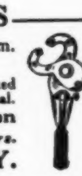
ASK YOUR DEALER. PATENTED IN CANADA 1913. U. S. PATENT PENDING.



Emmeline Pankhurst's Life Story

is an intimate, personal account of the militant movement told by the intense, human, misunderstood Mrs. Pankhurst herself.

This is the first really authentic article of the vast number that have been written on woman suffrage. Those who have as yet not heard the facts will be able to pick out the truth of the matter.

It is a general's story penned while the conflict is still raging. Millions will want it. You will want it—for inspiration, for light, for *fair play*.

Whether or not you believe in militancy, whether or not you believe in suffrage, you should read Mrs. Pankhurst's life story. You believe in woman at least.

Send the coupon opposite with a quarter and get this leader's autobiography in the next three months of

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We have Engined many of the Most World Famous Ocean Cruisers.
4 CUPS OUT OF 5—THE GREAT HAVANA RACE
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Four Cycle, 6 to 250 H. P. Heavy Duty.

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"A Little Goes a Long Way and Every Drop Counts"
A. W. HARRIS OIL CO.
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HENKE MARINE BRONZE
TRADE MARK
"Worth Its Weight in Gold"

was used in preference to all others on the "motor boat "Detroit" on its trip from Detroit to St. Petersburg, simply on its merits.

The bottom paint that cannot foul up. *Guaranteed absolutely.* Send for booklet and color card.

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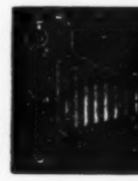

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Boat Covers — Spray Hoods
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Cushions and Canvas work of all kinds.
Prices Low for Best Work.

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Quality of Design *Quality of Materials*
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We build heavy duty Motors from 15 to 75 H. P.

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"J E N C I C K"
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JEWEL Open Window Storage Battery

Look inside your battery through the patented open window. See condition of plates and height of acid. Jewel Special 6-60, $9. 6-80, $13. 6-100, $16. 6-100 Starting Battery, $18.

Jewel Detachable Electric Rowboat Motor, attaches to any rowboat or canoe, runs on 2 six-volt batteries. Complete without batteries, $15. *Write for Catalog.* *Business Established 1890*

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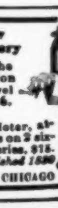

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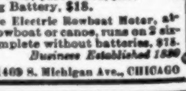

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For Gasoline, Air for Whistles, Oil, Water, Mufflers, Condensers, etc. Heavy sheet iron and plate steel work of any shape desired. Galvanizing of all kinds of boat work.

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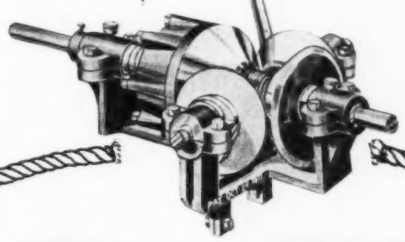


B. & W. GEARLESS REVERSE

Equip Your Boat With This Troubleproof Reverse

Every motor boat, from the smallest runabout to the largest cruiser, should have a reliable reversing mechanism. Perhaps it has been because of the faults of existing types that so many boatmen have tried to get along without a reverse gear.

The B. & W. Gearless Reverse is the very acme of convenience and freedom from trouble. Where ordinary gears are often heavy, noisy and cumbersome, the B. & W. Gearless Reverse is light, quiet, compact, durable and easy to operate.

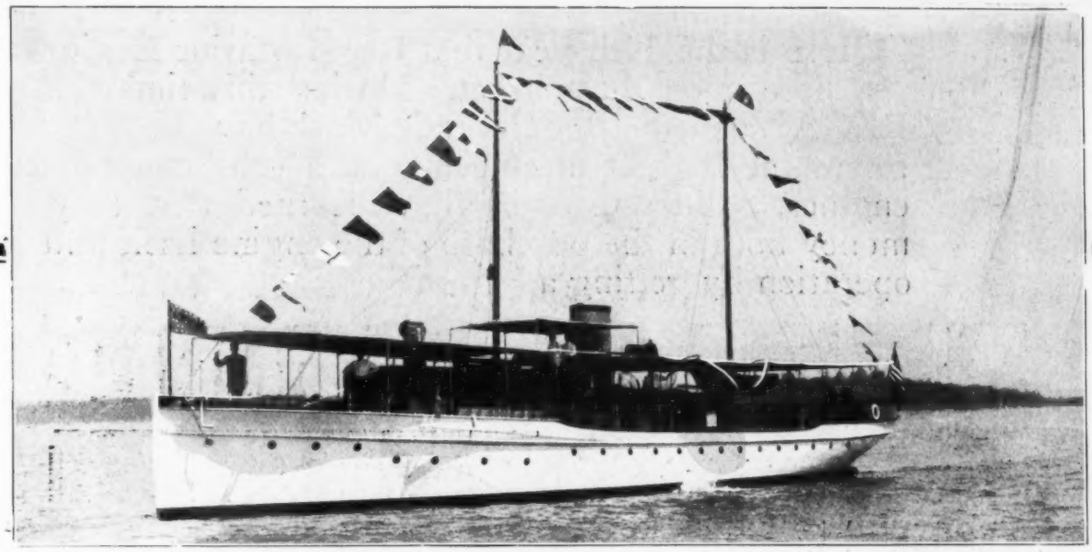
You can throw the lever from full speed ahead to full speed astern without danger of chipping or breaking any gear teeth. *The reverse speed is the same as the direct drive.* The drive is as positive as a geared mechanism, because it is designed for the power and weight of your boat.

The simplicity of the B. & W. Reverse is its greatest advantage. There is no complicated mechanism to wear out and difficult machine work or assembly to make the price exorbitant. This gear is within reach of every boat owner.

Write today for full information.

Universal Manufacturing Co.

Racine Wisconsin



CLARINDA, a 28' x 17' x 5' 6" Motor Cruising Yacht. Designed and built by the Matthews Boat Company. Owned by A. L. Stephens. An able sea boat, capable of 15 miles per hour. Beautiful finish and exceptionally complete equipment. Two 150 H.P. CRAIG motors installed.

Matthews Cruisers will be found distinctively different that no just comparison can be made with those of other build. Attention to detail, completeness of appointment, and perfect construction are a few points of superiority. No more expert supervision is possible in any plant.

The customer's interests are safeguarded to the greatest degree, due to the fact that all details of construction and equipment are designed and built in our own plant, excepting the motive power.

The Matthews Boat Company is absolutely responsible for satisfactory results in both design and construction, and guarantees perfect service upon delivery of boat. No expense is spared after delivery of a motor cruising yacht to make the customer a thoroughly satisfied customer. Think it over!

MEET US AT THE NATIONAL MOTOR BOAT SHOWS

THE MATTHEWS BOAT COMPANY, PORT CLINTON, OHIO

BUILDERS AND DESIGNERS OF THE WORLD'S FINEST PLEASURE CRAFT

MATTHEWS CRAFT — ASK AN OWNER

NAVALITE

BE GUIDED BY THE VERDICT OF THOSE THAT KNOW

WHAT THE SHIPYARDS ARE SAYING:

We have used during 1913 and still are using Chicago Varnish Co.'s marine line. We like Navalite for shipyard work, for we can get it out of the way. That means dust proof and rain proof, as quick as the quickest drying varnish on the market. It is much the easiest flowing, does not skin over or gum the brushes and has that long lasting luster. Cabinoleum, Supreme Yacht White and Supreme Yacht Black have no equal.

SIGNED:

Greenport Basin & Construction Co., Greenport, N. Y.
George Lawley & Son, Inc., Neponsit, Mass.
Newport Shipyard, Newport, R. I.
Camden Shipyard & Const. Co., Camden, Maine.
Fyfe & Hittorff Shipyard, Glenwood, L. I.
Tuthill & Thorn, Greenport, N. Y.
Burgess Co. & Curtis, Marblehead, Mass.
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Mathis Yacht Building Co., Camden, N. J.
Palmer Boat Co., Lake Geneva, Wis.
Weckler Boat Co., Chicago, Ill.

The Start at Larchmont --Race of 50-Footers

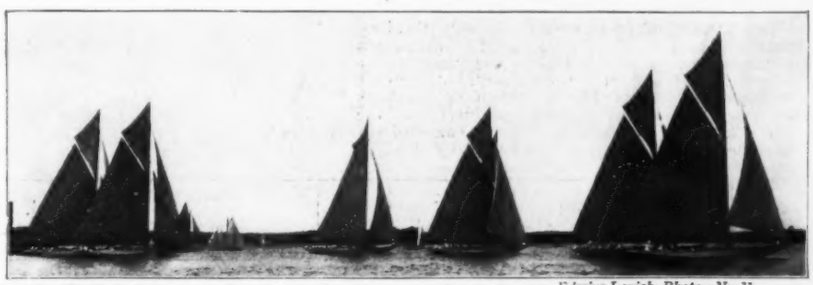
Every yacht in this great race was finished with materials made by the Chicago Varnish Co.

NOTHING ELSE WAS USED

Glenwood Shipyard, Long Island, N. Y.
Jan. 4th, '13.

CHICAGO VARNISH CO., Chicago, Ill.

Dear Sirs—The New York Yacht Club 50-foot racing class of 1913 were all finished with Supreme Yacht White, Cabinoleum and Navalite. *Nothing else was used.* Respectfully,
(Signed) FYFE & HITTORFF.



Edwin Levick Photo, N. Y.

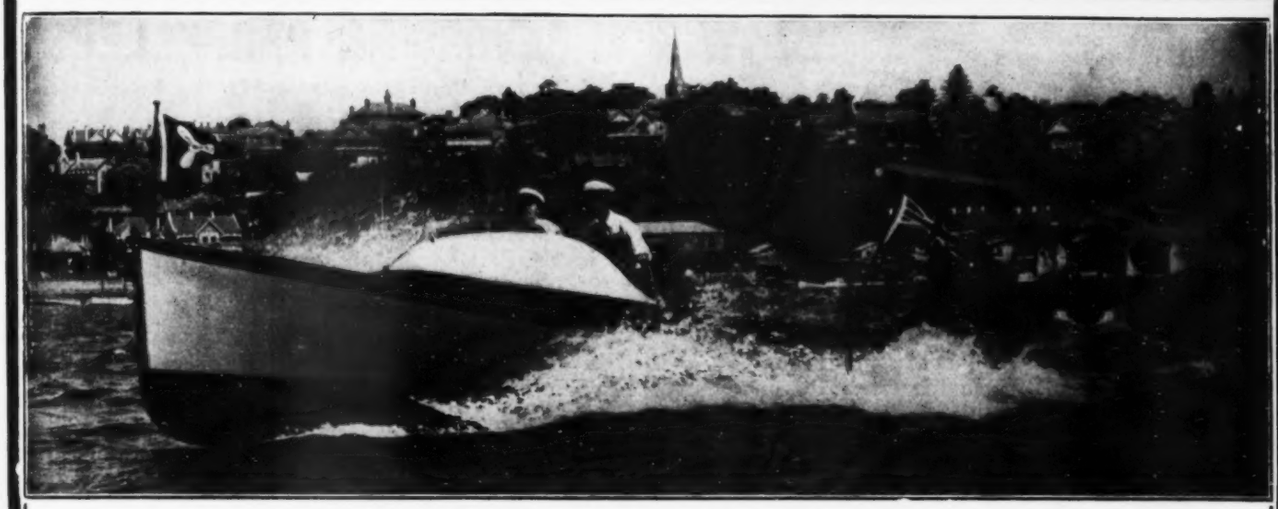
We submit the following list of Masters of Yachts, best known abroad, who have used Chicago Varnish Co.'s Marine Line for the season of 1913. We have tripled our output in New York and Boston, and have increased more than 100% our sales all over the country since last year. Names of Captains who have used it and recommend it:

John Bond	Steam	Yacht	Columbia	E. Pagel	Aux'l	Yacht	Atlantic	James Loersch	Schnr.	Yacht	Endymion	E. Sherlock	Steam	Yacht	Isis
A. C. Berton	"	"	Iolanda	C. Hanscomb	"	"	Wild Duck	F. L. Iverson	Steam	"	Alvina	Captain Lake	"	"	Vergemere
J. H. Crawford	"	"	Utowana	C. W. Scott	Steam	"	Aphrodite	G. W. Maskel				P. Netland	"	"	Ituna
W. P. Porter	"	"	Corsair	G. Potter	"	"	Rheclair	L. Miller				N. Ferguson	"	"	Sultana
A. Johnson	"	"	Winch'ter	P. Benzanson	"	"	Aloha	R. W. Sheldrake	Steam	Yacht	Speedwell	Captain Todd	"	"	Atlanta
B. Dungan	"	"	Noma	H. Dixon	"	"	Virginia	J. Gabrielson	"	"	Niagara	W. L. McLaen	"	"	Warrior
W. Lewis	"	"	O-we-ra	T. Farrington	"	"	Vanadis	A. Corkum	"	"	Cypress				

Yachts sailing in all parts of the world in all climates.

WE POSITIVELY GUARANTEE NAVALITE NOT TO TURN WHITE IN EITHER FRESH OR SALT WATER. Send for illustrated booklet.

CHICAGO VARNISH CO. **CHICAGO** **NEW YORK**



The One Complete Line

Complete Selection--Complete in Quality

Four models---18 sizes; every engine designed to meet certain particular requirements.

The man wanting power for a big cruising yacht or the man wishing to install power in a row boat will find the **right** engine in the Gray Line.

Yes, "There is a Gray for every Boat" ---yachts, cruisers, speed, pleasure and work boats, ferry boats and canoes.

Engines of the 2-cycle type from 3 to 36 H. P. and 4-cycle power plants in 4 and 6 cylinder sizes.

GRAY MARINE MOTORS
2 CYCLE & 4 CYCLE

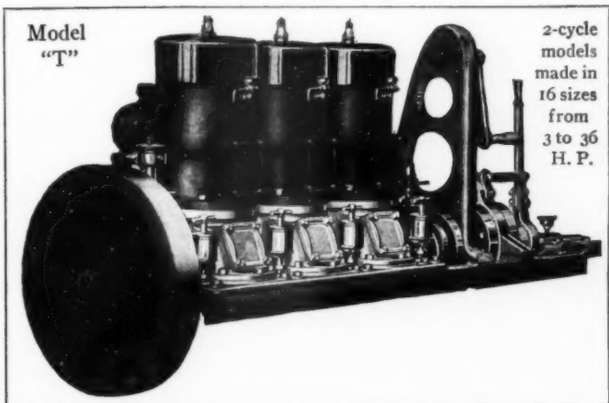
And the man who selects a Gray gets **real** power---he knows real motor boat satisfaction---he gets 100 per cent value in actual service for every dollar invested.

Not because we say so but because the facts are being proved daily by thousands of users in all parts of the world.

One thing is sure---you can't possibly afford to make your selection without first getting complete information about the Gray Line---our organization---our methods of doing business---the quality of our product and the service we render.

Every man interested in a marine engine or motor boat should have our big engine book "M" and our Boat Buyers' Guide. Write for your copies today.

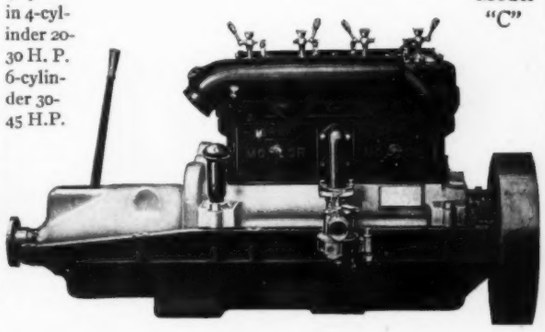
Model "T"



2-cycle models made in 16 sizes from 3 to 36 H. P.

4-cycle in 4-cylinder 20-30 H. P. 6-cylinder 30-45 H.P.

Model "C"



Remember This There isn't a "cheap" engine in the **Gray Line.** Our 3 H. P. at **$55,** 6 H. P. at **$89.50** and our double cylinder 6 H. P. at **$114.00** are absolutely high grade in every detail of workmanship and material.

The reasonably low prices that we quote on these sizes and all other engines in the Gray Line is due entirely to our splendid manufacturing facilities and exceptionally big output.

And behind every engine is a **lasting** guarantee **that means something** to you—the user.

GRAY MOTOR CO., 274 Gray Motor Bldg. **Detroit, Mich.**

Gray Complete Outfit

When you buy a Gray Motor you get everything ready to install engine in your boat.

Carburetor, circulating pump and commutator, flange coupling, propeller, shafting, combination bronze stern bearing stuffing box, spark coil, spark plug, double throw marine electric switch, wire, water scoop, bronze water intake terminal, bronze water strainer, bronze gasoline strainer, water cooled muffler, lag screws, drain cocks, spark plug protector and complete 72-page instruction book and gas engine manual.

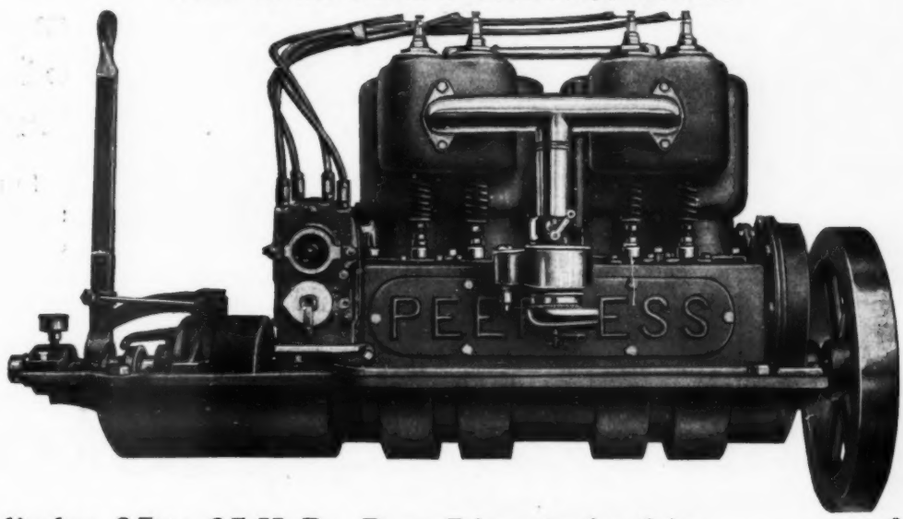
YEARS AHEAD

Again the manufacturers of the PEERLESS ENGINE prove that their product is years in advance. It will be remembered that the PEERLESS was the first high grade engine at a popular price, other manufacturers were quick to imitate us, but none have been able to equal the up-to-date design or the high quality of our engines.

The opening of the 1914 season still finds us far in the lead; the Standard "PEERLESS" with a bore and stroke of 4 in. x 6 in. is the only engine of this size before the public at this time. With this additional length of stroke the PEERLESS will develop considerably more power at the same speeds, or the same power at a greatly reduced speed. This feature gives greater economy than it is possible to attain with any other engine.

Four cylinder, 16 to 20 H. P. Bore 4 in., stroke 6 in. - - $300.00
Two cylinder, 8 to 10 H. P. Bore 4 in., stroke 6 in. - - 175.00

"Joe's" Reverse Gear on extension base, $40.00 extra.



Four cylinder, 25 to 35 H. P. Bore 5 in., stroke 6 in. - - $400.00
Two cylinder, 12 to 16 H. P. Bore 5 in., stroke 6 in. - - 250.00

"Joe's" Reverse Gear on extension base, $50.00 extra.

PEERLESS ENGINE SERVICE brings unsolicited letters of this kind

LETTER FROM MR. RICHARD ADELT

Tarrytown, N. Y., Dec. 29, 1913.

Peerless Marine Motor Co.,
Buffalo, N. Y.

Dear Sirs—Here is something in regard to your motor that may be of interest to you. Last spring I purchased a 27 ft. raised deck cruiser. The motive power was a standard make, two-cycle engine. I had trouble from the beginning, and finally had to give up using the boat. My wife and I had planned to spend our vacation cruising, and our disappointment was great. Three weeks before vacation time we decided to buy a new engine. Mr. Jacobsen, our boat builder, recommended your engine, and we were soon convinced that it was the best engine in the market, considering the price. In two weeks' time the engine arrived. Several days were spent in installing it. However, the first actual test was made the day we went on the cruise. This was my first experience with a four-cycle engine, but we had absolutely no trouble from the time we started until our return. We covered three hundred miles, and rode through several storms. The gasoline consumption was surprisingly small—somewhat less than one gallon per hour. We were driven at a speed of eight miles per hour, and always towing a dingy. My wife and I were delighted; we certainly had the most successful cruise in our experience, and this, thanks to your excellently designed engine. Any time anyone is interested in one of your motors, I will be only too glad to give a demonstration.

Very truly yours,

Richard Adelt.

QUALITY and PRICE

Manufacturers of high-priced engines have insinuated that a better class of materials and workmanship entered into the construction of their engines. This, however, is not a fact. Our castings are made of the same iron; our crank shafts are of the same carbon steel; our tools, fixtures, jigs, etc., are decidedly better, owing to the fact that we confine ourselves to one design of engine and build them in comparatively large quantities. The size limits that are maintained in the PEERLESS ENGINE would stagger the manufacturer who is building twenty sizes with the same equipment. Twenty sizes means a few of each every season, and not hundreds as is the case with the PEERLESS.

Our low price is made possible by cutting out all useless expense. Every man in the PEERLESS organization is a producer; consequently we can produce the PEERLESS ENGINE at our unequaled price.

PEERLESS MARINE MOTOR COMPANY

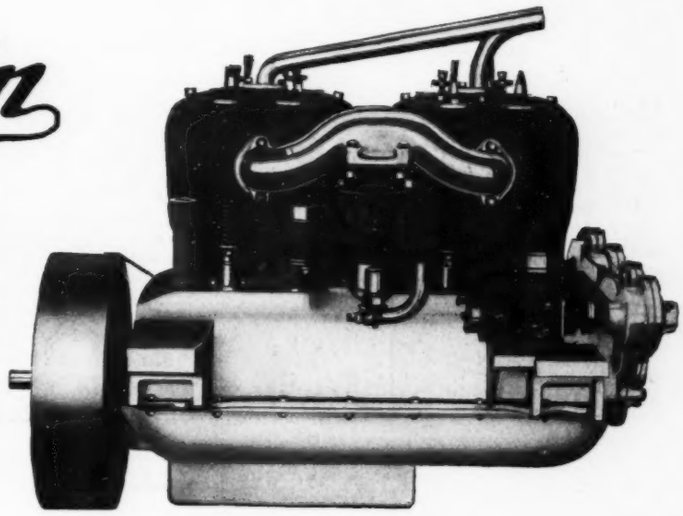
Look for us at the New York Motor Boat Show

BUFFALO, N. Y., U. S. A.

Offers You Unusual Service

The experience of the Wisconsin Motor Manufacturing Company in the manufacture of both automobile and marine engines, assures you lasting satisfaction. In all the big road races of the year, Wisconsin Motors swept the boards, while on the water they won the championship of Norway. This shows that in design, construction and performance Wisconsin Motors are *right*.

Wisconsin CONSISTENT Motors



Wisconsin Motors start easily, run steadily and practically without vibration, and are always under perfect control. You can depend upon them for consistent performance under all conditions. They are made in all sizes, 4 and 6 cylinder.

This Simple, Strong, Speedy, Medium-Duty Motor carries no extra weight, but delivers maximum service at minimum cost

There are no unnecessary parts in Wisconsin Motors—no complicated mechanism to constantly get out of order. While sturdily built for hard service, the fact that they carry no unnecessary weight makes a powerful appeal to the experienced motor boater. They are medium-duty, high speed engines, which develop a wonderful power on a low consumption of gasoline. All parts are easily accessible but adequately protected. Their smooth running quality reduces upkeep costs to the bottom-notch.

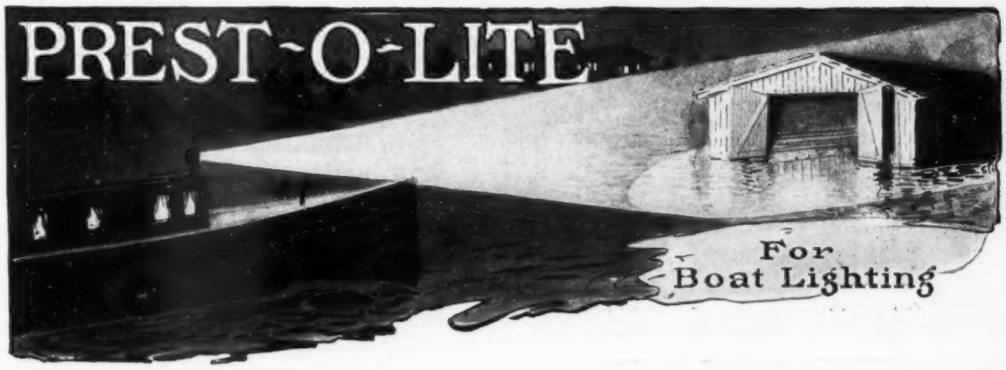
A Perfect, Self-contained Oiling System

The oiling system used in Wisconsin Motors never fails. Oil is pumped automatically to the working parts in just the right quantity, and is kept in prime lubricating condition by the location and construction of the oil chamber. In no other type of marine engine is the oiling problem solved so perfectly as in the Wisconsin Consistent Motor.

WRITE US TODAY

Find out how well the Wisconsin Motor is adapted to your power boat needs. Give us an idea of your needs and we will specify the size and type of engine required and tell you its cost. Catalogue describing Wisconsin Motors will be sent on request.

Dept. 33 - - - Milwaukee, Wisconsin



You want *dependable* lighting on your boat.

It must not have mysterious troubles.

Must not fail you far from help.

Prest-O-Lite has proved its absolute reliability — its freedom from trouble—its efficiency.

And you do not expose yourself to the constant care of delicate and complicated apparatus—you need not clutter up your boat with dynamos, batteries, shunts, switchboards or delicate connections—you need not sacrifice the power and speed of your boat.

The Result of Experience

"New York City,
Dec. 9, 1913.
Prest-O-Lite Co.,
Indianapolis, Ind.
Gentlemen:—

Is your lighting system good for 47 ft. cruiser I am now building? I'm sick of electric generators, storage cells, automatic cut offs, motors, etc., all of which junk I've had in previous boats. Please send me information."

(Name on request)

Prest-O-Lite is simple, substantial, trouble proof.

Anyone can understand and operate it. It requires no extra mechanism and weighs little.

It not only costs less to install but far less to operate than any electric system. Electrical repairs, battery replacements, light bulbs, fuel consumed in driving dynamo and other items cost far more than the necessary amount of Prest-O-Lite gas.

It does not rob your boat of speed by using power to run a generator.

Prest-O-Lite in different sizes provides ample supply of light for any size of boat.

"Push-the-Button" Convenience

Ideal convenience in lighting the searchlight and the port and starboard lights, is afforded by the Prest-O-Liter. Turn on the gas, press a button and the lamps are lit, with the flame correct in height.

Prest-O-Lite can also be used, with attractive fixtures, for any number or kind of cabin lights. The gas may be turned on and off at the jet, precisely like city gas. Our Automatic Reducing Valve gives the correct flame in all lamps at all times, no matter how many are turned on.

Simple to Install

Prest-O-Lite installation is very simple. Any plumber or mechanic can do the work in a few hours.

The Prest-O-Lite Oil Lamp Adapter is easily and quickly installed in any oil lamp and makes it a combination gas-and-oil lamp with the oil in reserve.

The gas connections (and the automatic lighter connection, if also used) are instantly detachable, making the lamps easy to disconnect if you wish to remove them during the day.

Send for This Folder

It tells why Prest-O-Lite is the best, simplest and most convenient lighting system for any boat, from a small sail boat to a big steam yacht.

It shows views of fine yachts and power boats with Prest-O-Lite equipment.

Get the real facts on lighting before you buy any lighting equipment.

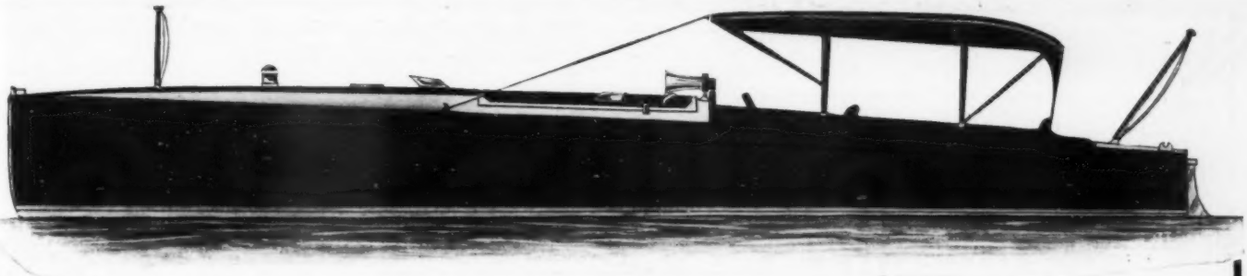
The Prest-O-Lite Co., Inc.
260 Speedway : : Indianapolis, Ind.
Exchange Agencies Everywhere

The Prest-O-Lite Co., Inc.
260 Speedway, Indianapolis, Ind.

Please send information on all lighting systems to —

_____

_____



Fastest *Displacement* Model

30' x 5' 10" Family Runabout—Guaranteed 30 m. p. h.

LET'S take a little demonstration ride. First notice the beautiful mahogany woodwork, all screw fastened and wood plugged with grain matching the planks. The paneled gray or buff decks contrast richly with the mahogany. Notice the graceful flare forward, the distinctive flush hatches, specially designed fittings, electric lights and Klaxon horn, all nickel plated. Under the hatches you find Van Blerck's six-cylinder, 5½ x 6 in., 100 H. P., $2,000 motor with electric starter and lighting system.

You sit down on the driver's seat—three men can sit here comfortably. Before you is the mahogany bulkhead with nickel-plated fixtures, oil pressure gauge, Ever Ready Tachometer and Bosch dual coil. The auto type steering wheel is nickel plated too.

With a touch of the button the electric starter spins the motor. Take the wheel yourself, advance the throttle and engage the clutch. Soon we are clipping off 33 miles per hour. Behind is a bubbly smooth wake; to the side, aft of amidships, the white spray hisses. At speed the bow lifts clear so the water breaks far aft, and the under section throws the spray outward (not up), and the wind can't blow spray inboard.

Thirty miles an hour in a good staunch boat is a mighty good performance. Notice the absence of vibration. Turn sharply to starboard, leaving the throttle open—she heels in only slightly. Slam through the rollers of that passing steamer; with your eyes shut you wouldn't realize there were any waves. Rough water is fun with this boat.

Now try the aft seat and examine the mahogany interior work closely. If your lady is along you may as well commence to figure out your bank roll. Ladies are delighted with this boat—it is so clean, dry and comfortable. The price, complete, is $3800; automobile top, $100 extra. Without electric starter and lighting system, tachometer and horn, but substituting a safety rear starter, the price is $3500.

32 ft. type with 8 cylinder Van Blerck motor is guaranteed at 35 m. p. h.
26 " " " 4 " " " " " " " 27 " " "

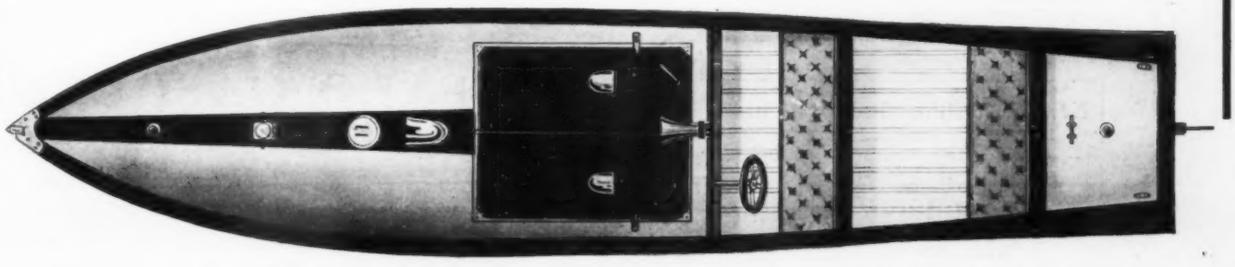
We have a dandy 16-footer for the young folks, guaranteed 20 m.p.h. for $500

Remember a Hacker guarantee is safe as the bank and always exceeded. With the records of Oregon Kid, Kitty Hawks, II-V, Jr., etc., fresh in your mind,—who do you think is the man to build your 1914 hydroplanes?

Don't write for plans or K. D. frames,—we don't sell them. When writing, state what type of speed boat interests you. Don't delay.

Mr. Hacker and Mr. Tripp will be in the Van Blerck booth frequently during the New York Show.

John L. Hacker Boat Co., P. O. Box 530, Albany, N. Y.



Scripps Motors are made in 1, 2, 4 and 6 cylinder sizes. Medium and Extra Heavy Duty Types.

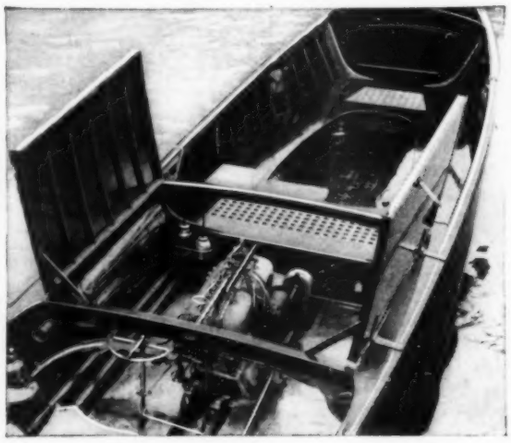


Photo of a Midget installation in modern yacht tender

Send for catalogue and information about Starters and Kerosene Motors.

YOU WON'T FIDGET WITH A "MIDGET"

YACHT OWNERS know, too well, how difficult it has been to get suitable, efficient motors for tenders, dingeys and small boats. For this reason, the Scripps Motor Company, early in 1912, decided to add to their line a miniature power plant, designed and built wholly for this purpose—an engine of high grade construction, equipped with all modern accessories, such as starter, magneto, control mechanism—a 4-cylinder, 4-cycle, 7-horse power motor, weighing only 200 lbs., known as the "Scripps Midget."

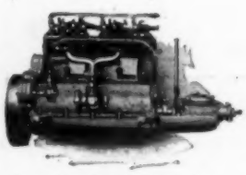
As was expected, it met with the widest approval—it filled a long-felt want.

Its beautiful finish—its absence of exposed working parts, its small size and weight, combined with its powerfulness and easy starting qualities, make it a perfect, reliable motive power.

Price, complete with all accessories, starter, reverse gear, shaft and propeller, $500 f. o. b. Detroit.

SCRIPPS MOTOR COMPANY

631 LINCOLN AVENUE ***DETROIT, MICHIGAN***



Port side of Midget showing enclosed valves

SCRIPPS MOTORS ARE CARRIED IN STOCK BY

New York.....Bowler, Holmes & Hecker Co., 141 Liberty Street
Chicago, Ill.....O. L. Cosgrove & Co., 215-219 Englewood Ave.
Philadelphia .....W. E. Gochenaur, 631 Arch Street
St. Louis, Mo.....Chas. J. Petill, 1860 N. Market Street
Jacksonville, Fla..Gibbs Gas Engine Co., Foot of Main Street
Seattle, Wash.....S. B. V. Miller, 72 Marion Street
San Francisco, Cal..Ellery Arms Co., 583-5 Market Street
Los Angeles, Cal..Marine Engine & Supply Co., 109 East 7th St.
Duluth, Minn.....Kelley Hardware Co., 118-120 W. Superior St.
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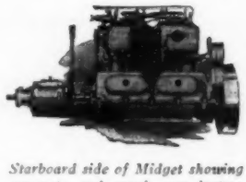
New Orleans, La..Arthur Duvic, 130 Chartres Street
EXPORT OFFICE: 17 Battery Place, New York City



Starboard side of Midget showing magneto and crank case inspection plates

HOLMES MOTORS

Holmes Motors are used where utmost reliability is essential. Ordinary motors may be good enough for ordinary service, but in motor life boats and in the boats of those private owners who can afford to discriminate, the Holmes has no peer. Holmes owners know the economy of quality.

New Bedford, Oct. 14, 1913.

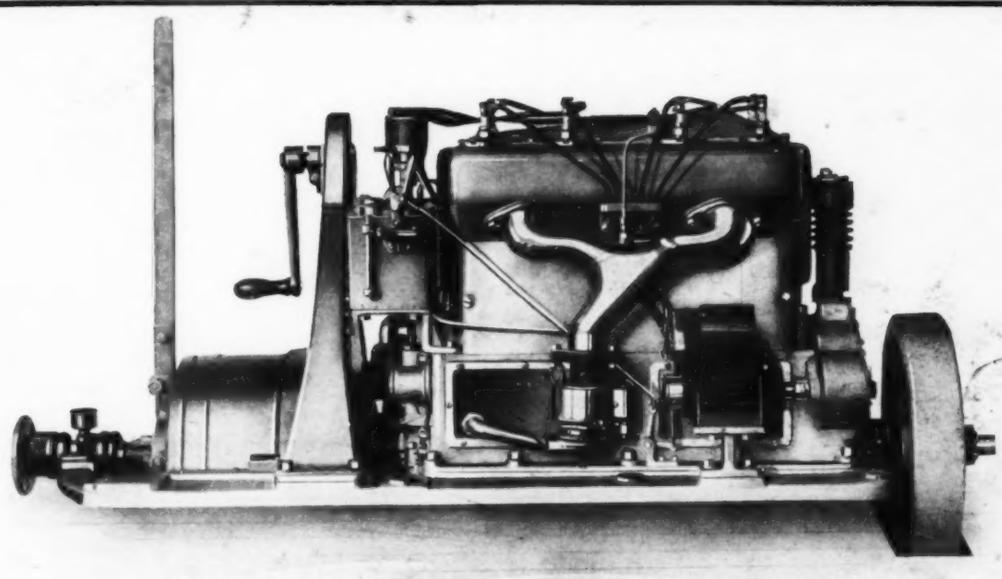
Holmes Motor Company, West Mystic, Conn.

Gentlemen: The six cylinder life boat model engine installed in the launch "Squid" has proved very satisfactory. Its flexibility, economy of gasoline and oil, and freedom from vibration at all speeds, are especially noticeable. I have had absolutely no engine trouble though making some long runs in rough water for a small boat.

Respectfully yours,
NATHANIEL HATHAWAY.

If there is not a Holmes agent in your territory, we want one.

THE HOLMES MOTOR COMPANY, INC.
WEST MYSTIC, CONN., U.S.A.



LOEW-VICTOR 30 H. P. RUNABOUT MOTOR

Equipped with or without Electric Starter

The tremendous popularity of this engine is proof of its high merit.
Ten other models — 6 to 150 H. P. *Write for 1914 Catalog.*

LOEW-VICTOR ENGINE COMPANY, - CHICAGO

OFFICE OF THE COMMODORE
LOCUST AVENUE AND EAST FIFTEENTH STREET
BROOKLYN, NEW YORK

November 11th. 1913

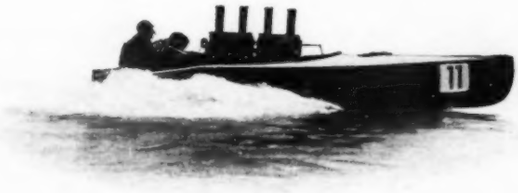
Mr C.A.Criqui,
Sterling Engine Co.
Buffalo, N.Y.

Dear Mr. Criqui:-

I cannot speak too strongly of the merits of the Sterling Engines, which have proven so dependable in my boats this Summer. None of the other makes of engines that were submitted to me were at all reliable, and I owe all the victories of the last two seasons to the Sterling Engine.

Very truly yours,

J. Stuart Blackton



What a Sterling has done for others a Sterling will do for you

QUADRI-COLOR COMPANY, NEW YORK

Vol. 1

Hell